

*Draft*



# Environmental Impact Statement for the Gold Rock Mine Project Volume 2

White Pine County, Nevada

BLM/NV/EL/ES/15-05+1793

*Lead Agency:*

U.S. Department of Interior  
Bureau of Land Management  
Ely District  
Egan Field Office



*Cooperating Agencies:*



Nevada Department of Wildlife



Duckwater Shoshone Tribe



White Pine County



Eureka County



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## Mission Statement

It is the mission of the Bureau of Land Management (BLM), an agency of the Department of the Interior, to manage BLM-administered lands and resources in a manner that best serves the needs of the American people. Management is based upon the principles of multiple use and sustained yield while taking into account the long-term needs of future generations for renewable and nonrenewable resources.

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## **CHAPTER 4**

### **ENVIRONMENTAL CONSEQUENCES**

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#### **4.1 IMPACT ASSESSMENT**

The Proposed Action and Action Alternatives outlined in Chapter 2 may cause, directly or indirectly, changes in the human environment. This EIS assesses and analyzes these potential changes and discloses the effects to the decision-makers and public. This process of disclosure is one of the fundamental aims of NEPA. There are many concepts and terms used when describing impact assessment that may not be familiar to the average reader. The following sections attempt to clarify some of these concepts.

##### ***4.1.1 Impacts/Effects***

The terms “effect” and “impact” are synonymous under NEPA. Effects may refer to adverse or beneficial ecological, aesthetic, historical, cultural, economic, social, or health-related phenomena that may be caused by the Proposed Action or Action Alternative (40 CFR 1508.8). Effects may be direct, indirect, or cumulative in nature. Cumulative effects are analyzed in Chapter 5.

##### ***4.1.2 Direct Effects***

A direct effect, caused by the action, occurs at the same time and place as the action (40 CFR 1508.8(a)). Direct and indirect effects are described in combination under each affected resource.

##### ***4.1.3 Indirect Effects***

Indirect effects are reasonably foreseeable effects, also caused by the action, that occur later in time or are removed in distance from the action (40 CFR 1508.8(b)). Direct and indirect effects are described in combination under each affected resource.

##### ***4.1.4 Significance***

The word “significant” has a very particular meaning when used in a NEPA document (40 CFR 1508.27). Significance is defined by CEQ as a measure of the *intensity* and *context* of the effects of a major federal action on, or the importance of that action to, the human environment. Significance is a function of the beneficial and adverse effects of an action on the environment.

Intensity refers to the severity or level of magnitude of impact. Public health and safety, proximity to sensitive areas, level of controversy, unique risks, or potentially precedent-setting effects are all factors to be considered in determining intensity of effect. Context means that the effect(s) of an action must be analyzed within a framework, or within physical or conceptual limits. Resource disciplines; location, type, or size of area affected (e.g., local, regional, national); and affected interests are all elements of context that ultimately determine significance. Both long- and short-term effects are relevant.

##### ***4.1.5 Indicators***

Impact indicators are the consistent currency used to determine change (and the intensity of change) in a resource. Working from an established existing condition (i.e., baseline conditions



described in Chapter 3) this indicator would be used to predict or detect change in a resource related to causal effects of proposed actions.

#### ***4.1.6 Environmental Effect Categories***

Environmental effect categories are presented to define context for each resource that is analyzed in this chapter, and to provide a common language when describing effects. The duration of an impact can be transient or temporary, short-term, or long-term. For this analysis, the following definitions are used:

- Transient or temporary effects: short-lived, for example during construction.
- Short-term effects: 13 or fewer years.
- Long-term effects: greater than 13 years.

#### ***4.1.7 Additional Monitoring and Mitigation***

If Applicant-Committed EPMs are anticipated to minimize but not eliminate impacts, the BLM may require additional monitoring measures to determine the level of impact and whether mitigation measures would be needed.

Mitigation measures are means to address environmental impacts that are applied in the impact analysis to reduce intensity of or eliminate the impacts. To be adequate and effective, CEQ rules (40 CFR 1508.20) require that mitigation measures fit into one of five categories:

- 1) Avoiding the impact altogether by not taking a certain action or parts of an action;
- 2) Minimizing impacts by limiting the degree or magnitude of the action and its implementation;
- 3) Rectifying the impact by repairing, rehabilitating, or restoring the affected environment;
- 4) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action; or
- 5) Compensating for the impact by replacing or providing substitute resources or environments.

The proponent, or applicant, has developed Applicant-Committed EPMs as part of the Proposed Action and alternatives presented in Chapter 2. Mitigation measures presented in this chapter would be applied in addition to the Applicant-Committed EPMs that the applicant has proposed.

## **4.2 WATER RESOURCES**

### ***4.2.1 Analysis Areas***

The analysis area for all action alternatives includes the Newark Valley north of the Plan area to US 50 and Railroad Valley/Northern Part south of the Plan area approximately 15 miles to the Duckwater Shoshone Reservation. The analysis area for the No Action Alternative is the approved, amended 2011 Exploration Plan area.

### ***4.2.2 Indicators***

Project-related activities have the potential to impact the quantity or quality of water resources through short- and long-term surface disturbance, as well as groundwater withdrawals for mine



use. The following indicators have been identified to evaluate potential project impacts on water resources, including their potential project-related cause:

- Changes in volume of surface water flows following precipitation events, presence or effectiveness of stormwater controls
- Changes in surface water chemistry
- Changes in groundwater pumping rates, flow rates, and volumes
- Changes in groundwater chemistry, drawdown rates, water infiltration rates, perennial yield, appropriation, or consumption

### **4.2.3 Proposed Action**

For the description of potential effects to water resources within the analysis area as a result of the Proposed Action, the water resources associated with the project are categorized as either surface water or groundwater resources. Effects are also described by project phase (construction; operation, maintenance, and reclamation). The baseline surface water and groundwater resources potentially affected by the Proposed Action are described in detail in Section 3.2.

## **Construction**

### **Surface Water**

Runoff that would be contained in on-site sediment control basins would not discharge downstream in the existing drainage channels. As a result, stormwater flow out of the project area would be reduced slightly under the Proposed Action. No mapped springs or seeps are located in the Plan area. Potential impacts to the quantity of groundwater discharging at regional springs are addressed in the groundwater section. No wetlands have been identified within or in close proximity to the Plan area. The closest wetland is about 13 miles to the southeast of the southern Plan area boundary on and near the Duckwater Shoshone Reservation.

Potential effects to surface water quality within the analysis area during construction include increases in suspended sediment and turbidity in dry drainages because of increased erosion resulting from vegetation clearing, topsoil stockpiling, fugitive dust from construction vehicles and earth-moving activities, and general soil disturbance. Because surface water drainages in the Plan area are ephemeral to intermittent, the potential increased erosion and subsequent deposition of sediment in dry drainages would occur during runoff from snow melt and rainstorms.

As described in detail in the Plan and its appendices, including the Stormwater Management Plan (Midway 2013a) and summarized in section 2.3.10, Midway would implement extensive stormwater controls such as drainage diversion ditches, sediment control basins, straw bales, and other Applicant-Committed EPMs to divert stormwater and snow melt around disturbance areas and control the transportation of sediment. Whenever practical, Midway would reclaim disturbed surfaces concurrent with construction and operations. Planned reclamation strategies include contouring, covering with growth media, and seeding to hold soil in place during runoff (Midway 2013a). Midway would construct the facilities as zero discharge facilities; install secondary containment features; and implement Applicant-Committed EPMs, including the SPCC Plan that would be included in the application for the WPCP, the Petroleum Contaminated Soil Management, and Spill Contingency and Emergency Response plans



(Midway 2013a). If a reportable spill or release were to occur and not be captured by stormwater controls, stormwater could transport chemicals downstream. Considering surface flow off the Plan area, the closest perennial surface water body downgradient of the Plan area is located 3.2 miles south of the Plan area (Figure 3.2-1).

No groundwater connection is believed to exist between the basin fill aquifer and any of the three springs in the region. However, to address concerns about potential indirect impacts to the endangered Railroad Valley springfish, potential impacts to the quality of groundwater that could discharge as surface water at Big Warm Springs or Little Warm Springs were evaluated by considering routes of contamination and proposed control measures and response plans. In the absence of site-specific information, a hypothetical groundwater migration rate, or velocity, for impacted groundwater can be calculated using a hydrogeologic analysis based on Darcy's Law (Freeze and Cherry 1979). Parameters used in this analysis include: hydraulic conductivity of  $5 \times 10^{-3}$  cm/sec (representing a vertically averaged value based on a range of soil types and grain sizes anticipated to be encountered); regional hydraulic gradient of 0.005 feet per foot; effective porosity of 1 percent; distance to springs of 12 miles.

The results of the calculation indicate that the groundwater migration rate between the Plan area and Big Warm Springs or Little Warm Springs could be up to seven feet per day, which means it would require 20 years for groundwater containing chemicals to migrate from the Plan area to Big Warm Springs or Little Warm Springs and impact the quality of water in surface water at these springs. Based on best available fate-and-transport knowledge, any spilled or released chemicals not captured by management plans or Applicant-Committed EPMs would attenuate naturally across that horizontal distance. To detect any adverse impacts to groundwater quality, Midway would install deep groundwater monitoring wells, and collect water quality samples from these wells on a regular basis. Sample results would indicate any impact to groundwater, and Midway could address the impact before the chemicals could impact surface water quality for the closest end user 12 miles away.

## Groundwater

Water for dust control, fire suppression and soil compaction use during construction would be obtained from the existing on-site water supply well. Figure 2.3-1 shows the location of the water supply well. This water would be stored in temporary tanks or ponds to fill water trucks that would transport the water to the place of use. The amount of water used during construction would be less than that used during operations so the environmental impact of groundwater withdrawal would be less than that described below for operations.

Green Springs is believed to be a range front spring, sourced from the White Pine Mountains rather than from Easy Ridge or the Plan area. Big Warm Springs and Little Warm Springs are believed to be range front springs, sourced from the Duckwater Hills rather than from Easy Ridge or the Plan area (Figure 3.2-2). Based on available information, no groundwater connection exists between the basin fill aquifer in which the Easy Junior well is believed to be located and any of the three springs in the region. However, to address concerns about potential indirect impacts to the endangered Railroad Valley springfish, potential impacts to surface water quantity in Big Warm Springs or Little Warm Springs during construction were evaluated, assuming a groundwater connection and using a Theis (1935) analysis. The Theis analysis is a standard method of evaluating potential impacts to surface water resources from pumping groundwater at wells.

For Big Warm Springs and Little Warm Springs, this analysis assumed that these springs are connected to the same aquifer system in which the Easy Junior well is screened. Parameters



used in this analysis included: hydraulic conductivity of  $5 \times 10^{-3}$  cm/sec (representing a vertically averaged value based on a range of soil types and grain sizes anticipated to be encountered); basin fill aquifer thickness of 1,600 feet (based on Heilweil and Brooks 2011); storativity = 0.1 (i.e., unconfined conditions); pumping duration of nine months; distance to spring of 12 miles. Results of the Theis analysis on the Easy Junior well indicate that potentiometric drawdown at Big Warm Springs or Little Warm Springs would be less than 0.01 feet (i.e., not measurable) after pumping the Easy Junior Well at a rate of 1,200 gallons per minute continuously for nine months. A cone of depression defined by 1 foot of drawdown would extend 1.3 miles from the Easy Junior well after pumping for 9 months at 1,200 gpm.

Regarding potential impacts to groundwater quality, the depth of groundwater beneath the mine area is more than 1,200 feet bgs and, therefore, is not anticipated to be encountered during proposed construction or exploratory drilling. The potential for hazardous materials or other wastes to spill and subsequently affect groundwater quality would be minimized or avoided through implementation of the Spill Contingency and Emergency Response Plan (Midway 2013a). If a reportable spill or release were to occur and not be captured by secondary containment measures, any uncaptured chemicals could migrate vertically or horizontally. If chemicals migrated downward, the chemicals would have to travel greater than 1,200 feet bgs to reach groundwater underlying the Plan area. Based on best available fate-and-transport knowledge, any spilled or released chemicals would attenuate naturally across that vertical distance. Deep groundwater monitoring well sample results would indicate any impact to groundwater, and Midway could address the impact before the chemicals could impact the closest end user 12 miles away.

Construction is expected to take six to nine months to complete. With implementation of the Applicant-Committed EPMs outlined in Section 2.3.10 and 2.3.17, any impacts to water resources that may result from the construction phase of the Proposed Action are expected to be short term.

### **Operation, Maintenance, and Reclamation**

Operations and maintenance would begin simultaneously with construction and would have similar types of impacts to surface water and groundwater resources as during the construction phase.

#### **Surface Water**

Runoff containment in on-site sediment control basins would slightly reduce stormwater flow out of the project area. As described previously, there are three mapped, active springs in the region. Potential impacts to the quantity of water discharging from the springs are addressed in the groundwater section. No wetlands have been identified within the analysis areas; therefore, no impacts to wetlands are anticipated during operations, maintenance, or reclamation.

Precipitation that would fall on the open pits, heap leach pad, and process ponds would be contained within those facilities and would not be discharged downstream of the mine area. Erosion and sediment delivery to dry drainages in the analysis area may increase as a result of vegetation removal; stockpiling of topsoil; fugitive dust from operations; potential mine-influenced drainage from WRDAs; disturbance associated with roads and other ancillary facilities; and general soil disturbance. These impacts would occur primarily during snow melt and storm water runoff events. As noted for the construction phase, to minimize or avoid impacts to water quality Midway would construct or implement extensive stormwater controls such as drainage diversions, sediment control basins, straw bales and other Applicant-



Committed EPMs during operations to divert stormwater and snow melt around disturbance areas and control sediment transport (Midway 2013a). A full staff of mining and administrative personnel would be on-site during operations to identify and address any spills or releases.

To address concerns about potential indirect impacts to the endangered Railroad Valley springfish, impacts to surface water quality at Big Warm and Little Warm springs during operations due to an unintended release of chemicals to the ground at the mine were evaluated using a hydrogeologic analysis based on Darcy's Law. Parameters used in this analysis include: hydraulic conductivity of  $5 \times 10^{-3}$  cm/sec; regional hydraulic gradient of 0.005 feet per foot; effective porosity of 1 percent; distance to springs of 12 miles.

Results indicate that the groundwater migration rate between the Plan area and Big Warm Springs or Little Warm Springs could be up to seven feet per day, which means it would require 20 years for groundwater containing chemicals to migrate from the Plan area to Big or Little Warm Springs and impact the quality of water in surface water at these springs. Based on best available fate-and-transport knowledge, any spilled or released chemicals any potential impacts to water quality would attenuate naturally across that horizontal distance. In addition, a full staff of mining and administrative personnel would be on-site during operations to identify and address any spills or releases. Furthermore, deep monitoring well results would indicate any impact to groundwater quality, and Midway could address the impact before the chemicals could impact the closest end user 12 miles away.

If the TSF were to fail, impacts could include short-term or long-term changes to resources. The intensity and extent of the effects would depend on the size of the failure. Regarding water resources, following the natural drainage downstream of the TSF, the nearest mapped perennial surface water is located 7.4 miles southeast of the toe of the TSF on Bull Creek (Figure 3.2-1).

## Groundwater

The NDWR has approved 26,402 afy of water rights in the Railroad Valley/Northern Part (NDWR 2014a). This amounts to about 35 percent of the perennial yield. The proposed mining project would involve withdrawal of approximately 2,000 afy, which is approximately 3 percent of the approved rights relative to perennial yield.

Potential impacts to groundwater quantity in the analysis area include lowering water levels or reducing volume available in existing groundwater resources or for groundwater users. The three mapped, active springs in the region are believed to be range-front springs with no connection to the basin fill aquifer (Section 3.2). At Green Springs this concept is further supported by the fact that there is more than 200 feet of elevation difference between surface water at Green Springs (elevation approximately 6,080 feet above mean sea level) and groundwater in the Plan Area (groundwater elevation at Easy Junior well is approximately 5,850 feet above mean sea level). Groundwater would not flow from a lower elevation to a higher elevation.

The closest human users are the residents of the community of Duckwater, approximately 14.5 miles south. In addition, the endangered Railroad Valley springfish is found in Big Warm and Little Warm springs, located approximately 12 and 13 miles south, respectively. Big Warm and Little Warm springs are also believed to be range-front springs with no groundwater connection to the basin fill aquifer (Section 3.2). However, to address concerns about potential indirect impacts to the endangered Railroad Valley springfish, impacts to surface water quantity at Big Warm Springs or Little Warm Springs due to groundwater pumping during operations were evaluated using a Theis (1935) analysis. Parameters used in this analysis include: hydraulic



conductivity of  $5 \times 10^{-3}$  cm/sec; basin fill aquifer thickness of 1,600 feet (based on Heilweil and Brooks 2011); storativity = 0.1 (i.e., unconfined conditions); Easy Junior well pumping duration of 13 years; pumping rate of 1,200 gpm continuously for 10 years and 600 gpm for an additional three years (Williams 2014a); distance to spring of 12 miles. Results of the analysis indicate that potentiometric drawdown at 257 Big Warm Springs or Little Warm Springs would be limited to 0.1 feet (i.e., approximately 1 inch of drawdown). A cone of depression defined by 1 foot of drawdown would extend 4.9 miles from the Easy Junior well after 10 years of pumping at 1,200 gpm and 3 additional years of pumping at 600 gpm.

Midway would construct a number of operable facilities that either would use or could generate contaminants that could potentially impact groundwater if spilled in large enough quantities. Large scale functional areas and facilities that would be potential generators or emitters of contaminants that could potentially impact soils and ultimately groundwater include: the mine pit, WRDAs, heap leach pad and TSF.

According to the Plan, the proposed ultimate pit shell would not be excavated into groundwater. However, the Plan states that some rain water or snowmelt (meteoric water) may accumulate in the pit bottom. Diversion structures would be designed and constructed to keep surface water runoff from entering the mine pit. Although limited in volume, the meteoric water that could contact rock at the mine pit walls and pit floor may dissolve heavy metals or/and acidic ions from the rock into solution. This water may then migrate into the subsurface through natural and man-induced fractures in the rock and encounter groundwater. Groundwater levels are greater than 1,200 feet bgs, and any contamination is anticipated to attenuate naturally over that distance.

Some types of waste rock have the potential to generate acid and/or leach heavy metals and other chemicals of concern. In terms of potential impacts, operations at the heap leach pad and TSF have the potential to release water containing contaminants that could leach through the ground and impact groundwater quality, if a major accident or failure of an engineered facility occurs. The extent to which such hypothetical releases of contaminants at these facilities would impact water quality in the Plan or analysis areas depends on a number of factors, including, among other things, the location, timing, and volume of the released contaminants; the nature of the chemicals and geochemistry of the released contaminants; the hydrogeologic and geochemical environment; and the climate/weather at the time of release. If water containing contaminants were to be released into the ground during operations, maintenance, or reclamation, appropriate actions would be taken to address the released contaminants in accordance with the Spill Contingency and Emergency Response Plan (Midway 2013a), and in accordance with federal, state, and local spill response regulations.

To minimize or avoid impacts to groundwater quality, Midway would obtain the appropriate permits (Table 1.9-1), including a WPCP. An application for a WPCP must contain detailed plans for the development of WRDAs, heap leach facilities, and TSF. These detailed plans would include monitoring of the waste rock for acid generation potential and the leaching of heavy metals and other contaminants of concern. The plans also would include monitoring of the heap leach pad for leak detection. The NDEP must approve these plans before an applicant can receive a WPCP, and would require any necessary measures to prevent adverse effects on groundwater.

Midway would construct the facilities as zero discharge facilities and would install secondary containment features. Midway would implement Applicant-Committed EPMs, the SPCC, fluid monitoring and management and closure plans, and reporting programs that would be included in the application for the WPCP, the reclamation plan summarized in section 2.3.16 of this EIS



and included in the Plan, and the Waste Rock Management, Groundwater Monitoring, Petroleum Contaminated Soil Management, and Spill Contingency and Emergency Response plans appended to the Plan (Midway 2013a). In the event of a spill or release that was not properly controlled, Midway would comply with federal, state, and local spill response regulations.

In order to assess the potential impact to groundwater quality during the operations, maintenance, and reclamation phase of the Proposed Action, acid-base accounting and metals leaching potential tests were performed on a variety of rock samples at the site (Interralogic 2013a). A total of 157 rock samples from the within or adjacent to the pit were analyzed using Acid Base Accounting (ABA) methods. About 60 percent of the rock samples analyzed were found to be potentially acid generating. Eight waste rock samples were then placed in Humidity Cell Tests (HCTs). After 39 weeks of conducting these HCTs, two of the cells were found to produce acidic water (Interralogic 2013a).

Chainman shale would make up about 60 percent of the waste rock produced. Meteoric Water Mobility Procedure (MWMP) testing was performed on samples of this shale. The reported concentration of aluminum, antimony, arsenic, beryllium, cadmium, chromium, copper, fluoride, iron, manganese, nickel, selenium, sulfate, thallium, TDS and zinc exceeded the Nevada Reference Values (NRVs) at least once. Some samples of other rock types tested using the MWMP produced leachate with concentrations of arsenic, magnesium, selenium, sulfate, and thallium that exceed the NRVs (Interralogic 2013a).

The volume of waste rock that is known or potentially known to produce an acidic or otherwise contaminated leachate has not been accurately assessed (Midway 2013a). Based on results of geochemical testing performed on 157 rock samples (Interralogic 2013a), 60 percent of the samples were categorized as potentially acid generating (PAG); however, a significant portion of the waste rock is likely inert due to low sulfur content. In comparison, the average neutralizing potential (NP) is high, approximately 210 tons of neutralizing potential per ton of calcium carbonate, or roughly 21 percent, due to the high percentage of limestone and calcareous shale present. The actual percentage would be determined during additional block modeling, ongoing testing, and operational sampling and analysis during mining (Interralogic 2013a). Data from the waste rock sampling program would be reviewed with the NDEP and BLM to determine if an adaptive management plan would be necessary to selectively place and isolate PAG material.

Further evidence of the presence of acid generating waste rock has been identified in the existing WRDA developed by Alta Gold. Acidic discharge began seeping from an area near the toe of this facility following closure of the facility in 2004 (Netcher 2013). Unless the water balance changes, for example unless more precipitation and/or infiltration occurs, or the hydraulic head within the WRDA increases, existing conditions would continue under the Proposed Action.

The available information indicates that some of the waste rock generated as a result of the Plan would have the potential to generate acidic water and water containing contaminants such as heavy metals that could leach through the ground and impact groundwater quality. Midway would implement the measures outlined in the baseline chemistry and waste rock management plan appended in the Plan and comply with federal, state, and local spill response regulations. These measures would avoid or minimize the potential for impacts to groundwater quality.

## **Water Rights**

As described above, the current perennial yield of the aquifer system in basin 173B, Railroad Valley/Northern Part is estimated by NDWR at 75,000 afy (NDWR 2014a). The NDWR has



appropriated 26,402 afy of water rights in the Railroad Valley/Northern Part (NDWR 2014a). This amounts to about 35 percent of the perennial yield.

Midway has applied for two permits to appropriate water. The Southern Nevada Water Authority has submitted a request that Midway's permits be considered, with temporal restrictions. If the NDWR approves Midway's permit applications, the appropriated water rights Midway would receive would be part of NDWR's existing appropriated water rights. No change to appropriated water rights would occur under the Proposed Action. Midway estimates that it would use water at an average rate of approximately 1,200 gpm (Midway 2013a), which equates to approximately 2,000 afy. Midway's proposed water use would represent approximately 7.6 percent of the existing appropriated water rights in the Railroad Valley/Northern Part and 2.7 percent of perennial yield. A sufficient amount of appropriated water is available in the Railroad Valley/Northern Part. Implementation of the Proposed Action would not impact other water users in the area.

The amount of water consumption necessary for the Proposed Action can be explained in terms of water consumption correlating to a certain stage of the project (i.e. construction, construction/initial operations, and general operating levels).

Exploration would potentially consist of the lowest water consumption, and it is anticipated that only a few truckloads of water per day would be required for each drill site, plus the water necessary for dust control. The construction stage water usage is dependent on weather conditions during construction. Water usage during construction would be much higher than is required for the initial exploration stage. The construction stage would require water consumption for not only the continued exploration activities, but also dust control for roads and the increased traffic and construction activities. Water would be necessary for mixing concrete, soil conditioning and compaction purposes for construction of the leach pad base, building sites and roads. The construction phase would require six to nine months.

During late construction/initial operations, water usage would potentially reach the highest level due to the need to build the solution inventory, within the barren pond first, and then wet up the heap and bring the heap leach process up to operating capacity. Exploration activities would continue during this stage as well as the necessary dust control measures.

Once the initial start-up is completed, mining operations and water consumption would drop to general operating levels, which would be slightly lower than construction/initial operations. The operations phase would occur over a ten year period.

#### ***4.2.4 Northern Power Line Route Alternative***

Hydrologic impacts associated with this alternative during construction, operation, maintenance, and reclamation activities would be similar in type, intensity, and duration as those described under the Proposed Action. This alternative power line route would cross five fewer dry washes identified as intermittent or ephemeral in the NHD compared to the Proposed Action power line route.

#### ***4.2.5 Southern Power Line Route Alternative***

Hydrologic impacts from other project facilities for construction, operation, maintenance, and reclamation activities would be similar in type, intensity, and duration as those described under the Proposed Action. This alternative power line route would cross four fewer dry washes identified as intermittent or ephemeral in the NHD compared to the Proposed Action power line route.



#### ***4.2.6 Northwest Main Access Route Alternative, Northern Power Line Route***

This alternative would involve additional road building and widening activities to establish an alternative main access route. The Northwest Main Access Route Alternative, Northern Power Line Route would result in similar types, intensity and duration of hydrologic impacts as described under the Proposed Action. The alternative power line route would cross five fewer dry washes identified as intermittent or ephemeral in the NHD compared to the Proposed Action power line route. The new connector road along the alternative access route would cross one additional dry wash identified as intermittent or ephemeral in the NHD compared to the Proposed Action.

#### ***4.2.7 Northwest Main Access Route Alternative, Southern Power Line Route***

This alternative would involve additional road building and widening activities to establish an alternative main access route. The Northwest Main Access Route Alternative, Southern Power Line Route would result in similar types, intensity and duration of hydrologic impacts as described under the Proposed Action. The alternative power line route would cross four fewer dry washes identified as intermittent or ephemeral in the NHD compared to the Proposed Action power line route. The new connector road along the alternative access route would cross one additional dry wash identified as intermittent or ephemeral in the NHD compared to the Proposed Action.

#### ***4.2.8 Modified County Road Re-Route Alternative***

The Modified County Road Re-Route Alternative would result in similar types, intensity and duration of hydrologic impacts as described under the Proposed Action.

#### ***4.2.9 Western Tailings Storage Facility Alternative***

The Western Tailings Storage Facility Alternative would result in similar types, intensity and duration of hydrologic impacts as described under the Proposed Action. This alternative TSF would be located in one additional dry wash identified as intermittent or ephemeral in the NHD compared to the Proposed Action TSF.

#### ***4.2.10 No Action Alternative***

Under the No Action Alternative, the Proposed Action would not be constructed and there would be no associated project effects to water resources excluding the previously authorized exploration activities as described in Section 2.2. The exploration bore holes would be plugged and abandoned according to state regulations.

#### ***4.2.11 Additional Monitoring and Mitigation***

No additional monitoring is required. No mitigation is required.



## 4.3 GEOLOGY AND MINERALS

### 4.3.1 Analysis Areas

The Proposed Action analysis area includes:

- The Plan area and second water supply well and infrastructure including a 0.5-mile corridor (0.25-mile on each side of center line) for a 0.5-mile-long, 12-foot-wide two-track road, a 0.5-mile-long power line adjacent to the road, and a 150-foot by 150 foot well pad; for impact analysis purposes, specialists assumed that the proposed second well would be installed 0.5-mile south of the existing Easy Junior water supply well;
- A 200-foot-wide corridor (100 feet on each side of the center line) along the Proposed Action power line route to allow flexibility for field placement (Figure 1.1-2);
- 0.5-mile-wide corridors (0.25-mile on each side of the center line) for segments of the existing and new road on the proposed county road re-route to account for disturbance if, in the future, White Pine County decides to widen the road to meet BLM “resource road” standards (Figure 1.1-2).

The Northern Power Line Route Alternative analysis area is similar to the Proposed Action analysis area, with one modification:

- Inclusion of a 200-foot-wide corridor for the Northern Power Line Route Alternative, instead of a 200-foot-wide corridor along the Proposed Action power line route (Figure 2.4-1).

The Southern Power Line Route Alternative analysis area is similar to the Proposed Action analysis area with one modification:

- Inclusion of a 200-foot-wide corridor for the Southern Power Line Route Alternative, instead of a 200-foot-wide corridor along the Proposed Action power line route (Figure 2.4-1).

The Northwest Main Access Route Alternative, Northern Power Line Route analysis area is similar to the Proposed Action analysis area, with two modifications:

- Inclusion of a 200-foot-wide corridor for the Northern Power Line Route Alternative, instead of a 200-foot-wide corridor along the Proposed Action power line route (Figure 2.4-1);
- Inclusion of a 0.5-mile-wide corridor (0.25-mile on each side of the center line) along the Northwest Main Access Route (Figure 2.4-2)

The Northwest Main Access Route Alternative, Southern Power Line Route analysis area is similar to the Proposed Action analysis area, with two modifications:

- Inclusion of a 200-foot-wide corridor for the Southern Power Line Route Alternative instead of a 200-foot-wide corridor along the Proposed Action power line route (Figure 2.4-1);
- Inclusion of a 0.5-mile-wide corridor (0.25-mile on each side of the center line) along the Northwest Main Access Route Alternative (Figure 2.4-2)



The Modified County Road Re-Route Alternative analysis area is similar to the Proposed Action analysis area, with one modification:

- Inclusion of a 0.5-mile-wide corridor for an existing segment of BLM 4059 from BLM 4006/CR 1180 to the proposed county road re-route, instead of the 0.5-mile-wide corridors along the new BLM road segment and unmarked BLM road segment (Figure 2.4-3).

The analysis area for the Western Tailings Storage Facility Alternative (Figure 2.4-4) is the same as the Proposed Action analysis area.

The No Action Alternative analysis area is the approved, amended 2011 Exploration Plan area.

### 4.3.2 Indicators

Indicators used to assess potential impacts to geological resources include the following:

- Quantity of ore and waste rock material to be excavated;
- Number and types of mining claims, geothermal nominations, and oil and gas leases in the affected area;
- Areas of surface disturbance; and
- Facilities to be constructed in areas of potential geotechnical instability.

### 4.3.3 Proposed Action

Under the Proposed Action, geology and minerals would be directly affected by the relocation and processing of gold ore-bearing materials and relocation of overburden/waste rock. An estimated total of 169.6 million tons of overburden would be excavated under the Proposed Action. In the context of total mineable rock within the analysis area, these impacts would be permanent and local. The summary of the basic design parameters and dimensions of the proposed pit is shown in Table 4.3-1.

**Table 4.3-1 Pit Design Parameters and Dimensions**

Open Pit	Slope (Degrees)	Length (feet)	Width (feet)	Acres	Maximum Depth (feet)	Pit Bottom Elevation (feet AMSL)
Gold Rock Pit	40-55	8,600	2,400	367	800 to 1,000	5,740

Overburden would be relocated to the WRDAs. The North WRDA would store 83.4 million tons and the South WRDA would store 86.2 million tons. A summary of basic design parameters and dimensions for the proposed WRDAs is shown in Table 4.3-2.

**Table 4.3-2 WRDA Design Parameters and Dimensions**

WRDA	Width (feet)	Length (feet)	Reclaimed Slope (Degrees)	Height (feet)	Crest Elevation (feet AMSL)
North WRDA	2,800	4,800	18	380	6,790
South WRDA	2,700	5,200	18	380	6,790



The quantity of ore excavated over the life of the mine would vary somewhat with market conditions, but the heap leach pad would be designed for a capacity of approximately 77 million tons. The excavated ore would be crushed on-site and processed at the heap leach pad. Slurry consisting of processed ore tailings would be stored at the TSF and reclaimed in place at mine closure. Negligible volumes of overburden would be removed during construction of other facilities that require level footings.

Construction of other mine facilities, roads, and power lines would limit the accessibility of underlying minerals in those areas. These impacts would persist as long as the facilities are operated and maintained. Upon decommissioning and reclamation of particular features, these areas could be considered for future development of geologic or mineral resources. The mine pit could also be re-opened for exploration in the future if warranted by economic conditions or technological developments. The primary indicator for impacts to the accessibility of geologic or mineral resources is the total area of surface disturbance. Under the Proposed Action, approximately 3,946 acres of surface disturbance would occur. Some geologic and mineral resources would be inaccessible within the analysis area.

Geotechnical instability could occur in the form of slope failure or rockfall. With the exception of the existing Easy Junior pit, no areas of potential geotechnical instability are known to be present within the analysis area. Seismic activity has potential to occur during the construction through reclamation phases at intensities that could affect slope stability. Movement of the pit wall along joints, fractures, faults, and other discontinuities could occur with or without seismic influence. Slope failure or rock fall within the pit could delay mining operations and represent a temporary impact to the availability of mineral resources. Similar effects could occur due to poor blasting control (over blasting) in the pit, which could also affect slopes adjacent to the pit. Slope instability outside of the pit would most likely affect roads and access to various mine facilities.

The Proposed Action power line route would span alluvium along parts of the route. Road cuts, grading, or blasting required to build the power line maintenance road and install the power poles could create minor slope instability. If rock cuts are required to construct the road, or if existing slopes are required to be undercut, sliding of the rock along joints similar to that described for the pit could also occur and damage equipment or affect traffic flow. Potential geotechnical impacts due to slides along the power line maintenance road would be short-term (lasting only until the road can be cleared or repaired).

Tailings storage facility dam and heap leach pad failure due to seismic activity or other unforeseeable circumstances could lead to a discharge of contaminated material to areas without containment and underlining. To minimize risk of a TSF failure, Midway would obtain the appropriate permits from NDEP and NDWR, and subsequently build, manage, and close the TSF in compliance with appropriate permits and regulations. Risk reduction measures are described in section 2.3.9 and noted in Table 2.3-8. Implementation of these measures would result in a very low probability of a failure.

If the TSF were to fail, impacts could include short-term or long-term changes to resources. The intensity and extent of the effects would depend on the size of the failure. Impacts could include short-term or long-term loss of access to mineral resources.



#### ***4.3.4 Northern Power Line Route Alternative***

The types of direct and indirect effects to geologic and mineral resources under this alternative are expected to be the same as under the Proposed Action. The same amount of ore and overburden would be excavated, crushed, processed, and backfilled or used for cover material. Project facilities would have similar susceptibility to seismic and geotechnical hazards as under the Proposed Action. Construction of the Northern Power Line would involve 18 acres of disturbance compared to 51 acres of disturbance for the Proposed Action power line.

The Northern Power Line Route Alternative maintenance road would span alluvium along most of the route. Road cuts or grading required to build the road and install the power poles could create minor slope instability. If rock cuts are required to construct the road, or if existing slopes are required to be undercut, sliding of the rock along joints similar to that described for the pit under the Proposed Action could also occur and damage equipment or affect traffic flow. Potential geotechnical impacts due to slides along the power line maintenance road would be short-term (lasting only until the road can be cleared or repaired).

As under the Proposed Action, overall impacts to geologic and mineral resources would be permanent and local within the analysis area.

#### ***4.3.5 Southern Power Line Route Alternative***

The types of direct and indirect effects to geologic and mineral resources under this alternative are expected to be the same as under the Proposed Action. The same amount of ore and overburden would be excavated, crushed, processed, and backfilled or used for cover material. No additional mining claims or geothermal nominations would be affected. Project facilities would have similar susceptibility to seismic and geotechnical hazards as under the Proposed Action. Construction of the Southern Power Line would involve 17 acres of disturbance compared to 51 acres of disturbance for the Proposed Action power line.

The Southern Power Line Route maintenance road would span alluvium along most of the route. Road cuts or grading required to build the road and install the power poles could create minor slope instability. If rock cuts are required to construct the road, or if existing slopes are required to be undercut, sliding of the rock similar to that described for the pit under the Proposed Action, could also occur and damage equipment or affect traffic flow. Because the Southern Power Line Route would generally follow an existing BLM road, the likelihood of these impacts to occur is low and anticipated geotechnical impacts would be short-term (lasting only until the road can be cleared or repaired). As under the Proposed Action, overall impacts to geologic and mineral resources would be permanent and local within the analysis area.

#### ***4.3.6 Northwest Main Access Route Alternative, Northern Power Line Route***

The types of direct and indirect effects to geologic and mineral resources under this alternative are expected to be similar in types, intensity and duration as those described under the Proposed Action. The same amount of ore and overburden would be excavated, crushed, processed, and backfilled or used for cover material. Project facilities would have similar susceptibility to seismic and geotechnical hazards as under the Proposed Action.

Power line pole installation would result in 13 acres of short-term disturbance, compared to 35 acres under the Proposed Action.



Construction of this alternative main access route would result in approximately 10 acres of short-term surface disturbance related to obtaining gravel from two 5-acre pits located along the route. These areas would be reclaimed after completion of road construction.

Several segments of existing roads that already support commercial truck traffic would make up part of the alternative main access route. Other segments of the route would be constructed or widened. Short-term surface disturbance would include approximately 92 acres of road construction and widening along this alternative main access route. In comparison, the Proposed Action main access route was upgraded several years ago, and no new surface disturbance would be required during road maintenance activities.

Overall, 64 greater acres of short-term surface disturbance would occur under this alternative compared to the Proposed Action. Long-term impacts would be similar to those described under the Proposed Action.

Power line maintenance road construction would span alluvium along most of the route. Road cuts or grading required to build the road could create minor slope instability. If rock cuts are required to construct the road, or if existing slopes are required to be undercut, sliding of the rock similar to that described for the pit under the Proposed Action, could also occur and damage equipment or affect traffic flow. Potential geotechnical impacts due to slides along the power line maintenance road would be short-term (lasting only until the road can be cleared or repaired).

As under the Proposed Action, overall impacts to geologic and mineral resources would be permanent and local within the analysis area.

#### ***4.3.7 Northwest Main Access Route Alternative, Southern Power Line Route***

The direct and indirect effects to geologic and mineral resources under this alternative are expected to be similar in types, intensity and duration as those described under the Proposed Action. The same amount of ore and overburden would be excavated, crushed, processed, and backfilled or used for cover material. Project facilities would have similar susceptibility to seismic and geotechnical hazards as under the Proposed Action.

Power line pole installation would result in 14 acres of short-term disturbance, compared to 35 acres under the Proposed Action.

Construction of this alternative main access route would result in approximately 10 acres of short-term surface disturbance related to obtaining gravel from two 5-acre pits located along the route. These areas would be reclaimed after completion of road construction.

Several segments of existing roads that already support commercial truck traffic would make up part of the alternative main access route. Other segments of the route would be constructed or widened. Short-term surface disturbance would include approximately 99 acres of road construction and widening along this alternative main access route. In comparison, the Proposed Action main access route was upgraded several years ago, and no new surface disturbance would be required during road maintenance activities.

Overall, 72 greater acres of short-term surface disturbance would occur under this alternative compared to the Proposed Action. Long-term impacts would be similar to those described under the Proposed Action.



Power line maintenance road construction would span alluvium along most of the route. Road cuts or grading required to build the road could create minor slope instability. If rock cuts are required to construct the road, or if existing slopes are required to be undercut, sliding of the rock similar to that described for the pit under the Proposed Action, could also occur and damage equipment or affect traffic flow. With implementation of either power line option under this alternative, construction would primarily occur along existing roads.

As under the Proposed Action, overall impacts to geologic and mineral resources would be permanent and local within the analysis area.

#### ***4.3.8 Modified County Road Re-Route Alternative***

The types of direct and indirect effects to geologic and mineral resources under this alternative are expected to be similar in types, intensity and duration as those described under the Proposed Action. The same amount of ore and overburden would be excavated, crushed, processed, and backfilled or used for cover material. Project facilities would have the same susceptibility to seismic and geotechnical hazards as under the Proposed Action. Under this alternative, 7 fewer acres would be disturbed by new road construction along the county road re-route. In the future, if White Pine County elects to upgrade the county road re-route, implementing this alternative would disturb 28 acres during road widening activities. In comparison, the Proposed Action would involve 22 acres of disturbance due to road widening. Overall, this alternative could result in 1 less acre of long-term disturbance compared to the Proposed Action.

Road widening, if required for the Modified County Road Re-Route Alternative, would span alluvium along most of the route. Road cuts or grading required to widen the road could experience minor slope instability due to construction. If rock cuts are required to construct the road, or if existing slopes are required to be undercut, sliding of the rock similar to that described for the pit under the Proposed Action, could also occur and affect traffic flow or damage equipment. Potential geotechnical impacts due to slides along the widened modified county road re-route would be short-term (lasting only until the road can be cleared or repaired).

As under the Proposed Action, overall impacts to geologic and mineral resources would be permanent and local within the analysis area.

#### ***4.3.9 Western Tailings Storage Facility Alternative***

The types of direct and indirect effects to geologic and mineral resources under this alternative are expected to be similar to the types, intensity and duration as those described under the Proposed Action. The same amount of ore and overburden would be excavated, crushed, processed, and backfilled or used for cover material. Project facilities would have the same susceptibility to seismic and geotechnical hazards as under the Proposed Action. The Western TSF footprint would cover 403 acres, compared to a 269-acre footprint for the Proposed Action TSF. Although the Western TSF footprint would be larger, this alternative would result in 118 fewer acres of total disturbance than the Proposed Action.

As under the Proposed Action, overall impacts to geologic and mineral resources would be permanent and local within the analysis area.



#### **4.3.10 No Action Alternative**

Current geologic and mineral resource trends within the analysis area would continue under the No Action Alternative. However, mineral development contemplated under Federal laws including the 1872 Mining Law would not occur. No direct or indirect impacts to geologic or mineral resources would occur as a result of implementation of the No Action Alternative.

#### **4.3.11 Additional Monitoring and Mitigation**

No additional monitoring is required. No mitigation measures are required.

### **4.4 PALEONTOLOGICAL RESOURCES**

#### **4.4.1 Analysis Areas**

The analysis areas are the same as those used for geology and minerals (Section 4.3.1).

#### **4.4.2 Indicators**

The following indicators were considered when analyzing potential impacts to paleontology:

- Known paleontological resources;
- Proximity to geologic strata with potential to contain paleontological resources; and
- Depth of excavations associated with project components.

Potential direct effects to paleontological resources include destruction of a paleontological resource, or its contextual geologic setting. These impacts typically occur during ground disturbing activities when heavy equipment or vehicle tires contacts these resources. Paleontological resources can be indirectly affected by road development, which can increase accessibility to the resources on public lands. Increased access could lead to increased erosion rates and theft or destruction of fossil remains or destruction of their geological context.

Impacts to specific paleontological resources are not presented because scientifically significant paleontological resources have not been identified in the analysis area. In addition, paleontological resources are generally located by active discovery during surveys, by chance during man-made disturbances, by exposure due to erosion, or other means. Consequently, the analysis focused on the potential for scientifically significant resources to occur within specific rock units that the project would disturb because any fossils contained within these units cannot be discovered and identified until the rock is fragmented and excavated.

#### **4.4.3 Proposed Action**

##### **Construction**

Direct effects to paleontological resources such as destruction, damage or displacement could occur from the disturbance of rock during construction of the facilities, roads, or power lines. Rock units disturbed would be Quaternary sediments; Tertiary volcanics; Tertiary tuff deposits; Mississippian Diamond Peak Formation sandstone, siltstone and silty claystone; Mississippian Chainman shale; Joana limestone; Pilot shale; and Devonian Devils Gate limestone. Of these units, only the limestones are known to contain fossils; however, they have low potential to contain scientifically significant fossils (PFYC class 2). Most fossils within these units are



invertebrate fossils that are commonly found in central Nevada. Consequently, they are not scientifically significant. No known occurrences of rare or sensitive fossils have been identified in these units in the analysis area.

Quaternary sediments and Tertiary sedimentary and volcanic rocks in the analysis area have been classified as having unknown potential (PFYC 3b) and could contain vertebrate fossils or scientifically significant invertebrate fossils. Surface disturbance would occur on approximately 1,048 acres (27 percent of all proposed surface disturbance) that overlay Quaternary alluvium and colluvium and approximately 14 acres (0.4 percent of all proposed surface disturbance) that overlay younger Tertiary sedimentary and volcanic rocks. However, no known scientifically significant paleontological resources are present within the analysis area.

No paleontological resources have been identified in the analysis area, and low potential exists for meaningful paleontological resources in the analysis area.

Midway would train its employees, contractors, and other related personnel regarding the environmental responsibilities required under the Plan. Paleontological resources of potential scientific interest encountered (including all vertebrate fossils and deposits of petrified wood) would be left intact and immediately brought to the attention of the BLM Authorized Officer (Table 2.3-8). Fossils determined to be scientifically significant would be excavated and curated, adding to the scientific database; this would be an indirect long-term beneficial impact.

Public access to areas underlain by geologic units that potentially bear scientifically significant fossils is not expected to increase notably because existing roads would provide the primary access to the mine. In addition, the area lacks outcrops and the general nature of the geologic units is flat. Consequently, fossil collection is not expected to increase.

### **Operations, Maintenance, and Reclamation**

The type and intensity of direct impacts to paleontological resources from disturbance of the ore and waste rock during exploration activities, mining of the pit, or operation and maintenance of mine facilities are expected to be similar to those expected to occur during construction. If paleontological resources of scientific interest are encountered, Midway would leave them intact and bring them to the attention of the BLM Authorized Officer (Table 2.3-8). As described for construction activities, although long-term operations, maintenance, and reclamation activities would increase overall access to the area, fossil collection is not expected to increase due to the lack of good areas for casual fossil collection.

If the TSF were to fail, impacts could include short-term or long-term changes to resources. The intensity and extent of the effects would depend on the size of the failure. Impacts could include short-term or long-term loss of access to paleontological resources.

#### ***4.4.4 Northern Power Line Route Alternative***

The types of direct and indirect effects to fossils and their geologic context under this alternative would be similar in types, intensity and duration to those for the Proposed Action. Compared to the Proposed Action, surface disturbance along the northern power line route alternative would occur on approximately 33 fewer acres, including approximately 11 fewer acres that overlay PFYC Class 3b units.



#### ***4.4.5 Southern Power Line Route Alternative***

The types of direct and indirect effects to fossils and their geologic context under this alternative would be similar in types, intensity and duration to those for the Proposed Action. Compared to the Proposed Action, surface disturbance along the southern power line route alternative would occur on approximately 34 fewer acres, including approximately 11 fewer acres that overlay PFYC Class 3b units.

#### ***4.4.6 Northwest Main Access Route Alternative, Northern Power Line Route***

The types of direct and indirect effects to fossils and their geologic context under this alternative would be similar in types, intensity and duration to those for the Proposed Action. Paleozoic bedrock units encountered along the northwestern flank of the Pancake Range would be similar to those within the Plan area. Surface disturbances along the Pan Mine Southwest Power Line Route maintenance road would occur on 46 greater acres than the Proposed Action, including approximately 46 greater acres that overlay PFYC 3b units.

#### ***4.4.7 Northwest Main Access Route Alternative, Southern Power Line Route***

The types of direct and indirect effects to fossils and their geologic context under this alternative would be similar in types, intensity and duration to those for the Proposed Action. Paleozoic bedrock units encountered along the northwestern flank of the Pancake Range would be similar to those within the Plan area. Surface disturbances along the Pan Mine Southwest Power Line Route maintenance road would occur on approximately 49 greater acres than the Proposed Action, including approximately 48 greater acres that overlay PFYC 3b units.

#### ***4.4.8 Modified County Road Re-Route Alternative***

The types of direct and indirect effects to fossils and their geologic context under this alternative would be similar in types, intensity and duration to those for the Proposed Action. Construction and maintenance of the Modified County Road Re-route would disturb a similar number of acres that overlay PFYC 3b units as the proposed county road re-route under the Proposed Action.

#### ***4.4.9 Western Tailings Storage Facility Alternative***

The types of direct and indirect effects to fossils and their geologic context under this alternative would be similar in types, intensity and duration to those for the Proposed Action. Implementing this alternative would result in approximately 118 fewer acres of surface disturbance than the Proposed Action. Compared to the Proposed Action, approximately 236 fewer acres that overlay PFYC Class 3b geologic units would be disturbed. Although the disturbance area that overlays PFYC Class 3 geologic units would decrease compared to the Proposed Action, approximately 143 greater acres that overlay younger sedimentary and volcanic rocks (unit Tys) would be disturbed, increasing the potential for direct impact to older (Miocene and Pliocene) fossils, which are known to be present in this unit elsewhere in White Pine County (UCMP 2013b). Compared to the Proposed Action, this alternative would have a higher potential to impact older fossils within Miocene and Pliocene deposits (unit Tys), but a lower overall potential for adverse impacts to scientifically significant paleontological resources, given the smaller surface disturbance footprint.



#### **4.4.10 No Action Alternative**

No known scientifically significant fossil resources are present within the analysis area.

#### **4.4.11 Additional Monitoring and Mitigation**

No additional monitoring measures are required. No mitigation measures are required.

### **4.5 SOILS**

#### **4.5.1 Analysis Areas**

The Proposed Action analysis area occurs within:

- The Plan area and second water supply well and infrastructure, including a 150-foot by 150-foot well pad; a 0.5-mile-long, 12-foot-wide two-track road; and a 0.5-mile-long, power line with a 100-foot pole spacing and a 50-foot-radius circle of disturbance for each pole to allow for monopoles or two pole structures; for impact analysis purposes, specialists assumed that the proposed second well would be installed 0.5-mile south of the existing Easy Junior water supply well;
- A 200-foot-wide corridor along the Proposed Action power line route to account for varying field conditions and allow flexibility during final siting of the line (Figure 1.1-2);
- Corridors along segments of the existing and new road on the proposed county road re-route to account for disturbance if, in the future, White Pine County decides to widen the road; 30-foot-wide corridors to meet BLM “resource road” standards were used for analysis purposes (Figure 1.1-2);
- A 0.5-mile-wide buffer (0.25 mile on each side of center line) along the main access route (Figure 1.1-2); and
- The running surfaces of other existing roads that lead to the Plan area (Figure 1.1-2).

The Northern Power Line Route Alternative analysis area is similar to the Proposed Action analysis area with one modification:

- Inclusion of a 200-foot-wide corridor along the Northern Power Line Route Alternative, instead of a 200-foot-wide corridor along the Proposed Action power line route (Figure 2.4-1).

The Southern Power Line Route Alternative analysis area is similar to the Proposed Action analysis area with one modification:

- Inclusion of a 200-foot-wide corridor along the Southern Power Line Route Alternative, instead of a 200-foot-wide corridor along the Proposed Action power line route (Figure 2.4-1).

The Northwest Main Access Route Alternative, Northern Power Line Route analysis area is similar to the Proposed Action analysis area with three modifications:

- Inclusion of the Northern Power Line Route Alternative, instead of the Proposed Action power line route (Figure 2.4-1);



- Inclusion of a 0.5-mile-wide buffer (0.25 mile on each side of center line) along the Northwest Main Access Route (Figure 2.4-2);
- Inclusion of the running surface of Green Springs Road from US 50 and BLM 1179/CR 1204 instead of a 0.5-mile corridor along main access route.

The Northwest Main Access Route Alternative, Southern Power Line Route analysis area is similar to the Proposed Action analysis area with three modifications:

- Inclusion of the Southern Power Line Route Alternative, instead of the Proposed Action power line route (Figure 2.4-1);
- Inclusion of a 0.5-mile-wide buffer (0.25 mile on each side of center line) along the Northwest Main Access Route (Figure 2.4-2);
- Inclusion of the running surface of Green Springs Road from US 50 and BLM 1179/CR 1204 instead of a 0.5-mile corridor along main access route.

The Modified County Road Re-Route Alternative analysis area is similar to the Proposed Action analysis area with one modification:

- Inclusion of a 30-foot-wide corridor along existing BLM 4059 from BLM 4006/CR 1180 to the proposed county road re-route, instead of the 30-foot-wide corridors along the new BLM road segment and unmarked BLM road segment (Figure 2.4-3).

The Western Tailings Storage Facility Alternative analysis area is the same as the Proposed Action analysis area.

The No Action Alternative analysis area is the approved, amended 2011 Exploration Plan area.

### **4.5.2 Indicators**

Indicators used to assess potential impacts to soil resources, including prime farmlands, include the following:

- Acres of soil disturbance and acres to be reclaimed; and
- Suitability of topsoil resources (growth media) for reclamation.

### **4.5.3 Proposed Action**

The types of anticipated impacts to soil resources include increased wind and water erosion, soil compaction, potential decreased soil productivity in disturbed areas, and potential contamination of soils from spills of chemicals during transportation, storage, and use. These impacts are expected to result from various activities as described below. Some impacts are anticipated to be partially offset by the salvage of topsoil resources which would be stockpiled for use as reclamation materials (growth media).

The proposed Project would create approximately 3,946 acres of surface disturbance under the Proposed Action. Indirect impacts to soils are not expected to occur under the Proposed Action. Indirect impacts to other resources, including air quality and surface waters could occur as a result of soil disturbances during all phases of the Proposed Action. Wind erosion could affect air quality and result in deposition of sediment in surface waters. Sediment transport and



sedimentation in downgradient streams would be minimized by use of stormwater diversions and sediment retention basins.

### **Construction**

Construction activities, including salvage and stockpiling of topsoil, are expected to directly impact soil resources, primarily through heavy equipment and vehicle operation. Soil compaction during these activities can contribute to soil erosion and reduced soil productivity. Compaction can affect soil productivity by decreasing soil permeability, reducing water storage capacity, damaging microbiotic crusts and other soil microorganisms, increasing bulk density, and increasing precipitation runoff and erosion potential.

As summarized in Table 3.5-1, NRCS soil interpretations indicate that soils within the proposed areas of disturbance generally have severe erosion hazards once the existing vegetative cover is removed due to a combination of slope and erodibility. Similarly, excavation, transport, and stockpiling of growth media could also break down soil aggregates, increasing the likelihood for erosion while stockpiled and prior to establishment of vegetation during reclamation efforts. Interim seeding of growth media stockpiles is expected to decrease the potential for erosion at these locations. Additionally, the stockpiles would be protected from run-on and runoff until final placement by stormwater diversions. Wind erosion could also occur on disturbed areas or during material handling.

Dust abatement measures may include use of magnesium chloride or lignin sulfonate. The impacts to soils due to use of these compounds is still being researched. Results of a study in north-central Colorado indicated that there were accumulated concentrations of magnesium and chloride in roadside soils. Effects were confined to an area within approximately 20 feet (6 meters) from the edge of treated roads but extended further (up to approximately 330 feet or 98 meters) in areas that receive runoff drainage. Downward mobility of chloride and magnesium ions generally prevented a lack of accumulation of these ions in upper soil profiles (Jacobi et al 2009). Based on this information, project-related impacts to soils would be short-term and limited in extent to the areas immediately adjacent to treated roads and areas of road drainage.

Overall impacts to soil resources as a result of Proposed Action construction activities (soil salvage and facility construction) are anticipated to be long-term.

### **Operations, Maintenance, and Reclamation**

The type and intensity of impacts to soil resources during operation and maintenance of mine facilities are expected to be similar to those expected to occur during construction. As described below, reclamation activities are expected to mitigate further impacts to soil resources but some impacts are still expected to occur.

Soils within the analysis area are generally poorly suited for reclamation purposes. However, many soils do currently support vegetation and likely have organic matter content favorable to reclamation. Because high quality topsoil is essentially absent within the analysis area, Midway plans to salvage approximately the top one foot of soil from disturbance areas for reclamation material. As a result, approximately 3,368,000 cubic yards of growth media are available for reclamation purposes (Table 2.3-6). Midway would salvage this material from 2,410 acres of mine facility footprints. This volume is adequate to cover the 3,456 acres of facilities (existing plus new disturbances) that would be reclaimed to a minimum depth of 6 inches. This is expected to provide suitable depth to achieve adequate and uniform coverage for seedbed preparation and reclamation. The Gold Rock Pit would not be reclaimed and therefore would not receive growth media.



Surface soils in the Plan area represent a source of seed and plant propagules and microorganism inoculums. Seeds and microbial inoculums are typically contained in the upper 8 inches of growth media. Root propagules are typically found within the top 2 feet of the soil profile. Stockpiling of these materials significantly reduces their viability over time. Therefore, direct placement (live-handling) of these soil components onto surfaces that have been prepared for reclamation is the most efficient post-disturbance use of this resource. The volume of soils to be direct placed as growth media would be determined at the time of salvage.

Mixing of salvaged soils during excavation, transport, storage, and redistribution is expected. The quality of these mixed salvaged soils would be similar to the pre-disturbance quality, as most soils within disturbance areas are similar in texture. Based on fuel availability and loading calculations presented in section 4.11, up to approximately 940 tons of available fuel wood, including live foliage and dead wood, would be salvaged and added to growth media stockpiles. Some of this salvaged woody material would be chipped and added to growth media stockpiles. Existing herbaceous vegetation could be incorporated into growth media during stripping. Incorporating existing woody and herbaceous material into salvaged soils would improve soil quality by increasing the organic matter content of soils (Eldridge et al. 2012). Where wood chips are added, soil moisture (water holding capacity) would increase and potential for erosion would decrease (Therrell et al. 2006). Increasing water holding capacity would help to offset droughtiness, which is one of the main limiting reclamation factors.

Upon placement of growth media for reclamation, soils would begin to revert to more natural conditions. Due to the inclusion of salvaged woody material, the quality of reclaimed soils with respect to vegetation establishment is expected to be similar or better than pre-salvage quality. However, natural soil structures and microbiotic crusts that are present in native soils would be destroyed and reclaimed soils would be more susceptible to erosion until vegetation is established. Vegetation rooting is likely to be limited beyond the reclaimed soils due to compaction of underlying subsoils during construction, operation, and reclamation activities. Infiltration of precipitation beneath the reclaimed soils due to the presence of a less-permeable horizon may increase the availability of water within reclaimed soils for vegetation but may also promote soil saturation and surface runoff during high precipitation events.

Over the long-term, continued soil development and vegetation growth would reduce soil loss due to erosion, increase infiltration rates, increase water-holding capacity, increase organic content, and development of soil structures and microbiotic crusts.

Direct impacts to soils from the release of mill reagents, leach solutions, fuels, and other chemicals could occur during transportation, loading, and fueling activities but would be limited during storage by use of secondary containment systems. Impacts from chemical releases would be minimized by spill response procedures and are expected to be short-term.

If the TSF were to fail, impacts could include short-term or long-term changes to resources. The intensity and extent of the effects would depend on the size of the failure. Increased erosion, or long-term compaction or reduced soil productivity could occur.

Overall impacts to soils during operations, maintenance, and reclamation would be long-term. The approximately 491 acres of disturbance that would not be reclaimed, including the 367-acre pit, would represent a long-term impact to soils within the analysis area.



#### ***4.5.4 Northern Power Line Route Alternative***

The types, intensity and duration of direct and indirect effects to soils under this alternative are expected to be similar to those described under the Proposed Action but would occur over a smaller area (Figure 2.4-1). Surface disturbances along the northern power line route would directly affect approximately 33 fewer acres of soils than under the Proposed Action. Impacts to soils under this alternative would be long-term. Other components (facility construction, operation, maintenance, and reclamation) would be the same as under the Proposed Action and would therefore create similar impacts.

Overall, compared to the Proposed Action, this alternative would create fewer impacts to soils. Surface disturbance would be approximately 1 percent less than the total disturbance under the Proposed Action. However, overall impacts during construction, operations, maintenance, and reclamation would still be long-term. As under the Proposed Action, the approximately 491 acres that would not be reclaimed would represent a long-term impact to soils within the analysis area.

#### ***4.5.5 Southern Power Line Route Alternative***

The types, intensity and duration of direct and indirect effects to soils under this alternative are expected to be similar to those described under the Proposed Action but would occur over a smaller area (Figure 2.4-1). Surface disturbances along the southern power line route would directly affect soils on approximately 34 fewer acres than under the Proposed Action. Impacts to soils under this alternative would be long-term. Construction of the eastern fence line would create similar impacts to soils as construction of the fence line under the Proposed Action. Other components (facility construction, operation, maintenance, and reclamation) would be the same as under the Proposed Action and would therefore create similar impacts.

Overall, compared to the Proposed Action, this alternative would create fewer impacts to soils. Surface disturbance would be approximately 1 percent less than the total disturbance under the Proposed Action. However, impacts during construction, operations, maintenance, and reclamation would still be long-term. As under the Proposed Action, the approximately 491 acres that would not be reclaimed would represent a long-term impact to soils within the analysis area.

#### ***4.5.6 Northwest Main Access Route Alternative, Northern Power Line Route***

The types, intensity and duration of direct and indirect effects to soils under this alternative are expected to be similar to those described under the Proposed Action but would occur over a larger area. This alternative would involve additional road building and widening activities to establish an alternative main access route (Figure 2.4-2).

Power line pole installation would result in 13 acres of short-term disturbance, compared to 35 acres under the Proposed Action.

Construction of this alternative main access route would result in approximately 10 acres of short-term surface disturbance related to obtaining gravel from two 5-acre pits located along the route. These areas would be reclaimed after completion of road construction.

Several segments of existing roads that already support commercial truck traffic would make up part of the alternative main access route. Other segments of the route would be constructed or widened. Short-term surface disturbance would include approximately 92 acres of road



construction and widening along this alternative main access route. In comparison, the Proposed Action main access route was upgraded several years ago, and no new surface disturbance would be required during road maintenance activities.

Overall, 64 greater acres of short-term surface disturbance would occur under this alternative compared to the Proposed Action. Long-term impacts would be similar to those described under the Proposed Action.

This additional disturbance would create additional direct impact to soils that would not occur under the Proposed Action. Soils that would be impacted by the Northwest Main Access Route Alternative, Northern Power Line Route would be slightly more prone to erosion than soils that would be impacted by the Northwestern Main Access Route, Southern Power Line Route. Impacts to soils during construction, operation, and maintenance of the Northwest Main Access Route Alternative, Northern Power Line Route would be long-term. Other components (facility construction, operation, maintenance, and reclamation) would be similar to those described under the Proposed Action and would therefore create similar impacts.

Overall, compared to the Proposed Action, this alternative would create greater impacts to soils. Surface disturbance would be approximately 2 percent more than the total disturbance under the Proposed Action. Impacts during construction, operations, maintenance, and reclamation would be long-term. As under the Proposed Action, the approximately 491 acres that would not be reclaimed, including the 367-acre pit, would represent a long-term impact to soils within the analysis area.

#### ***4.5.7 Northwest Main Access Route Alternative, Southern Power Line Route***

The types, intensity and duration of direct and indirect effects to soils under this alternative are expected to be similar to those described under the Proposed Action but would occur over a larger area. This alternative would involve additional road building and widening activities to establish an alternative main access route (Figure 2.4-2).

Power line pole installation would result in 14 acres of short-term disturbance, compared to 35 acres under the Proposed Action.

Construction of this alternative main access route would result in approximately 10 acres of short-term surface disturbance related to obtaining gravel from two 5-acre pits located along the route. These areas would be reclaimed after completion of road construction.

Several segments of existing roads that already support commercial truck traffic would make up part of the alternative main access route. Other segments of the route would be constructed or widened. Short-term surface disturbance would include approximately 99 acres of road construction and widening along this alternative main access route. In comparison, the Proposed Action main access route was upgraded several years ago, and no new surface disturbance would be required during road maintenance activities.

Overall, 72 greater acres of short-term surface disturbance would occur under this alternative compared to the Proposed Action. Long-term impacts would be similar to those described under the Proposed Action.

This additional disturbance would create additional direct impact to soils that would not occur under the Proposed Action. Soils that would be impacted by the Northwest Main Access Route Alternative, Northern Power Line Route would be slightly more prone to erosion than soils that would be impacted by the Northwest Main Access Route, Southern Power Line Route. Impacts



to soils during construction, operation, and maintenance of the Northwest Main Access Route Alternative, Southern Power Line Route would be long-term. Other components (facility construction, operation, maintenance, and reclamation) would be similar to those described under the Proposed Action and would therefore create similar impacts.

Overall, compared to the Proposed Action, this alternative would create greater impacts to soils. Surface disturbance would be approximately 2 percent more than the total disturbance under the Proposed Action. Impacts during construction, operations, maintenance, and reclamation would be long-term. As under the Proposed Action, the approximately 491 acres that would not be reclaimed, including the 367-acre pit, would represent a long-term impact to soils within the analysis area.

#### ***4.5.8 Modified County Road Re-Route Alternative***

The types, intensity and duration of direct and indirect effects to soils under this alternative are expected to be similar to those described under the Proposed Action.

Under this alternative, 7 fewer acres would be disturbed by new road construction along the county road re-route. In the future, if White Pine County elects to upgrade the county road re-route, implementing this alternative would disturb 28 acres during road widening activities. In comparison, the Proposed Action would result in 22 acres of disturbance due to road widening. Overall, this alternative could result in 1 less acre of long-term disturbance compared to the Proposed Action. These impacts would be long-term.

Road widening, if required for the Modified County Road Re-Route Alternative, would span alluvium along most of the route. Road cuts or grading required to widen the road could experience minor slope instability due to construction. If rock cuts are required to construct the road, or if existing slopes are required to be undercut, sliding of the rock similar to that described for the pit under the Proposed Action, could also occur and affect traffic flow or damage equipment.

Overall, compared to the Proposed Action, this alternative would create similar impacts to soils. Impacts during construction, operations, maintenance, and reclamation would be long-term. As under the Proposed Action, the approximately 491 acres that would not be reclaimed, including the 367-acre pit, would represent a long-term impact to soils within the analysis area.

#### ***4.5.9 Western Tailings Storage Facility Alternative***

The types, intensity and duration of direct and indirect effects to soils under this alternative are expected to be similar to those described under the Proposed Action. Because the TSF and related facilities would be constructed in different locations, the areal extent of direct impacts to some soil units would be slightly different. The Western TSF footprint would cover 403 acres, compared to a 269-acre footprint for the Proposed Action TSF. Although the Western TSF footprint would be larger, this alternative would result in 118 fewer acres of total disturbance than the Proposed Action.

Soils at the proposed location of the Western Tailings Storage Facility have generally the same severe water erosion characteristics as the proposed location of the TSF under the Proposed Action. The Western TSF would, however, be constructed in a less-steep area with lower potential for off-site transport of eroded materials. Similarly, relocation of Borrow Area-1 from the southern margin of the mine facility would decrease the potential for erosion and off-site sediment transport in that area. Soil impacts due to the operation and maintenance of the tailings storage facility would be similar to those at the TSF under the Proposed Action.



Reclamation materials salvaged from the Western Tailings Storage Facility would have similar, generally poor reclamation material properties as those salvaged under the Proposed Action; therefore, overall reclamation success is expected to be similar. Other components (facility construction, operation, maintenance, and reclamation) would be similar to that described under the Proposed Action and would therefore create similar impacts.

Overall, compared to the Proposed Action, this alternative would create fewer impacts to soils and lessen the potential for off-site transport of eroded soil material. Surface disturbance would be approximately 3 percent less than the total disturbance under the Proposed Action. Impacts during construction, operations, maintenance, and reclamation would be long-term. As under the Proposed Action, the approximately 491 acres that would not be reclaimed, including the 367-acre pit, would represent a long-term impact to soils within the analysis area.

#### **4.5.10 No Action Alternative**

Current soil resource trends within the analysis area would continue under the No Action Alternative. Soils would continue to be very susceptible to erosion by water and moderately susceptible to wind erosion where they have been previously disturbed. In these areas, locally decreased soil productivity is expected to continue in the absence of reclamation activities. No direct or indirect impacts to soil resources beyond those previously authorized would occur as a result of implementation of the No Action Alternative.

#### **4.5.11 Additional Monitoring and Mitigation**

No additional monitoring measures are required. Mitigation measures could include ripping or other loosening of surfaces in reclaimed areas. Effectiveness: Ripping or other loosening of surfaces in reclaimed areas would promote deeper vegetation growth, water-holding capacity of deeper soils, and stabilization of reclaimed soils. Effects on other resources: Ripping or loosening of surfaces in reclaimed areas could result in impacts to soils including loss of soil due to wind or water erosion, and impacts to surface water resources including increases in suspended sediment and turbidity in dry drainages because of increased erosion. Implementation of Applicant-Committed EPMs would minimize these impacts.

### **4.6 PRIME AND UNIQUE FARMLANDS**

This section evaluates impacts to soils designated as Prime Farmlands under implementation of each of the alternatives. Impacts to other soil types are analyzed in Section 4.5.

As described in Section 3.6, no Unique Farmlands were identified in the project area. Impacts to Unique Farmlands would not be expected to result from implementation of any of the alternatives analyzed in this EIS; therefore, Unique Farmlands are not described further.

#### **4.6.1 Analysis Areas**

The analysis areas are the same as those used for soils (Section 4.5.1).

#### **4.6.2 Indicators**

Indicators used to assess potential impacts to prime farmlands include the following:

- Loss of productivity of soils classified as “Prime Farmland if Irrigated and Reclaimed of Excess Salts and Sodium” (Prime Farmland).



### **4.6.3 Proposed Action**

Under the Proposed Action, the productivity of Prime Farmlands could be affected as a result of ground disturbances during construction of the proposed power line or during exploration activities. The types of anticipated environmental impacts to Prime Farmland soils include increased wind and water erosion, soil compaction, potential decreased soil productivity in disturbed areas, and potential contamination from spills of chemicals during transportation, storage, and use. These impacts could result from various activities as described below. Indirect impacts to Prime Farmlands are not expected to occur under the Proposed Action.

#### **Construction**

Anticipated impacts to soils designated as Prime Farmlands are similar to those described in Section 4.5, including potential loss of productive topsoil in disturbed areas, increased potential for wind and water erosion, soil compaction, and potential soil contamination from inadvertent spills of fuels or chemicals during transportation, storage, and use. A combined total of 3 acres of soils designated as Prime Farmland could be disturbed during construction of the proposed power line and associated maintenance road (1.9 acres) and during exploration activities (1.1 acres).

Exploration activities such as construction of roads, drill pads, sumps, auger holes or trenches, and overland travel could cause short-term disturbances within Prime Farmlands. Soil disturbances would predominantly be limited to localized areas in the immediate vicinity of the activities and short-term during construction of roads, drill pads and other facilities. Specific acreage that may be affected by the exploration activities associated with the Proposed Action cannot be defined because drilling locations are not yet identified. It is possible that no exploration activities would occur within Prime Farmlands under the Proposed Action.

Midway's phasing and concurrent reclamation would minimize or eliminate long-term impacts to soils, including Prime Farmlands. Assuming that successful reclamation can be achieved upon completion of construction, little or no loss of Prime Farmland productivity is anticipated. Impacts to soils designated as Prime Farmland productivity would be short-term.

#### **Operations, Maintenance and Reclamation**

During operations, maintenance and reclamation, ongoing exploration activities would continue. The total disturbances to Prime Farmlands during exploration activities would not exceed 1.1 acres, and the type and intensity of impacts to soil resources designated as Prime Farmlands are expected to be similar to those described for construction.

Implementation of the Applicant-Committed EPMs described in Table 2.3-8 would minimize impacts to Prime Farmlands. Assuming that successful reclamation can be achieved for disturbed areas, little or no loss of Prime Farmland productivity is anticipated during operations, maintenance, and reclamation. Impacts to soils designated as Prime Farmland productivity would be short-term.

### **4.6.4 Northern Power Line Route Alternative**

Construction and operations under the Northern Power Line Route Alternative would result in the same types, intensity and duration of impacts to Prime Farmlands as described under the Proposed Action, and 1.9 fewer acres of disturbance to Prime Farmlands would occur during alternative power line route construction. Assuming that successful reclamation can be achieved, impacts to Prime Farmland productivity would be short-term.



#### ***4.6.5 Southern Power Line Route Alternative***

Construction and operations under the Southern Power Line Route Alternative would result in the same types, intensity and duration of impacts to Prime Farmlands as described under the Proposed Action, and 1.9 fewer acres of disturbance to Prime Farmlands would occur during alternative power line route construction. Assuming that successful reclamation can be achieved, impacts to Prime Farmland productivity would be short-term.

#### ***4.6.6 Northwest Main Access Route Alternative, Northern Power Line Route***

Implementation of the Northwest Main Access Route Alternative could result in up to 12 additional acres of disturbance to Prime Farmlands. Although up to 12 additional acres of Prime Farmlands would be disturbed for construction of the proposed power line and associated maintenance road, construction and operations under this alternative would result in the same types, intensity and duration of impacts to Prime Farmlands as described under the Proposed Action. Assuming that successful reclamation can be achieved, impacts to Prime Farmland productivity would be short-term.

#### ***4.6.7 Northwest Main Access Route Alternative, Southern Power Line Route***

Implementation of the Northwest Main Access Route Alternative could result in up to 12 additional acres of disturbance to Prime Farmlands. Although up to 12 additional acres of Prime Farmlands would be disturbed for construction of the proposed power line and associated maintenance road, construction and operations under this alternative would result in the same types, intensity and duration of impacts to Prime Farmlands as described under the Proposed Action. Assuming that successful reclamation can be achieved, impacts to Prime Farmland productivity would be short-term.

#### ***4.6.8 Modified County Road Re-Route Alternative***

Construction and operations under the Modified County Road Re-Route Alternative would result in the same types, intensity and duration of impacts to Prime Farmlands as described under the Proposed Action, and up to 3 acres of disturbance to Prime Farmlands would occur. Assuming that successful reclamation can be achieved, impacts to Prime Farmland productivity would be short-term.

#### ***4.6.9 Western Tailings Storage Facility Alternative***

Construction and operations under the Western Tailings Storage Facility Alternative would result in the same types, intensity and duration of impacts to Prime Farmlands as described under the Proposed Action, and up to 3 acres of disturbance to Prime Farmlands would occur. Assuming that successful reclamation can be achieved, impacts to Prime Farmland productivity would be short-term.

#### ***4.6.10 No Action Alternative***

Under the No Action Alternative, authorized exploration activities would continue as described in Section 2.2. Exploration activities within the northernmost corner of the 2012 Exploration Plan of Operations boundary may result in a maximum total disturbance of 0.84 acre of Prime Farmland.



#### **4.6.11 Additional Monitoring and Mitigation**

No additional monitoring is required. Mitigation measures could include ripping or other loosening of surfaces in reclaimed areas. Effectiveness: Ripping or other loosening of surfaces in reclaimed areas would promote deeper vegetation growth, water-holding capacity of deeper soils, and stabilization of reclaimed soils. Effects on other resources: Ripping or loosening of surfaces in reclaimed areas could result in impacts to soils including loss of soil due to wind or water erosion, and impacts to surface water resources including increases in suspended sediment and turbidity in dry drainages because of increased erosion. Implementation of Applicant-Committed EPMs would minimize these impacts.

### **4.7 AIR RESOURCES**

The primary indicator of air quality impacts would be exceedance of the Nevada and national NAAQS (Table 3.7-1). This table shows the Nevada and National ambient air quality standards for six criteria pollutants, which are considered harmful to public health and the environment. The criteria pollutants include carbon monoxide (CO), lead (Pb), nitrogen dioxide (NO<sub>2</sub>), ozone (O<sub>3</sub>), particulate matter 10 microns or less in diameter (PM<sub>10</sub>), particulate matter 2.5 microns or less in diameter (PM<sub>2.5</sub>), and sulfur dioxide (SO<sub>2</sub>). For this analysis, predicted impacts are compared to national and Nevada NAAQS.

It is assumed that no long-range modeling will be needed to assess impacts to Class I Areas. The nearest Class I area is greater than 150 miles (250 kilometers) from the project area. Per Federal Land Managers' Air Quality Related Values Work Group's "Quantity Over Distance" ("Q/D") screening test, if the Q/D value is less than or equal to 10, no adverse impacts would be anticipated. For the Gold Rock Mine Project, emissions would need to be greater than 2,500 tons/year to impact this closest Class I area. Proposed project emissions are anticipated to be well below 2,500 tons/year and therefore no adverse impacts to the Class I area are anticipated. In addition, because most of the emissions from the project would be generated from low level sources, long-range transport of these emissions is not likely.

#### **4.7.1 Analysis Areas**

The analysis area for all alternatives except the No Action Alternative is the Plan area and a 1.8-mile (3,000 meter) receptor grid. This area includes the open pit, stockpiles, waste rock disposal area, mill and ancillary facilities. This area also includes the predicted maximum impact region for dispersion modeling. The analysis area for the No Action Alternative occurs within the approved, amended 2011 Exploration Plan area.

#### **4.7.2 Indicators**

Indicators used to assess potential impacts to air resources include the following:

- Potential effects on the airshed and air quality associated with project-generated air pollution emissions such as fugitive dust, emissions from ancillary facilities, and vehicular emissions;
- Release of potentially toxic pollutants, including mercury; and
- Effects on local and regional air quality, especially Class I airsheds.



### **4.7.3 Proposed Action**

#### **Construction**

Air quality impacts associated with construction would include emissions from construction equipment and fugitive dust. Earth-moving equipment and other equipment used during construction are sources of combustion emissions, including NO<sub>x</sub>, CO, VOCs, SO<sub>2</sub>, PM<sub>10</sub>, and PM<sub>2.5</sub>. Fugitive dust would result from activities associated with land clearing, grading, and excavation. Vehicles traveling on paved and unpaved roads would also generate fugitive dust. The amount of dust generated is a function of construction activities, silt and moisture content of the soil, wind speed, frequency of precipitation, vehicle traffic, vehicle types, and roadway characteristics. Fugitive dust from construction activities would be mitigated through the use of best management practices detailed in a Fugitive Dust Control Plan that would be developed as a mandatory part of Nevada's air permitting process.

Implementation of the Proposed Action would result in approximately 3,946 acres of disturbance (Table 2.3-1). The surface area between mine components is referred to as "inter-facility disturbance" and was assumed to be subject to disturbance during operation of the mine.

#### **Operation, Maintenance, and Reclamation**

##### **Process Air Pollutant Emissions**

The Proposed Action was analyzed for air emissions from the open pit, crushers, two WRDAs, a heap leach pad, processing ponds and plant, a mill, a CIL plant, a TSF, water supply wells and delivery/storage system, haul and access roads, growth media stockpiles, and ancillary support facilities.

Nearly all substantial sources of criteria air pollutant emissions from the Project (or any other mine) are reasonably proportional to the rate of production and processing of the mined material (that is, the mine's "throughput"). This is especially true of PM<sub>10</sub> and PM<sub>2.5</sub> emissions, the criteria air pollutants emitted from the greatest number of Project sources, and typically the air pollutants of greatest concern for a mining operation. A secondary factor is the distance this mined material is moved by haul trucks, as the movement of haul trucks on unpaved haul roads is typically the single largest source of PM<sub>10</sub> and PM<sub>2.5</sub> emissions for mine projects. Estimated annual Project material production rates would be the same in each of the expected 10 years of mine life. Year 10, the year with the largest number of predicted haul truck miles, was selected as the Project period to be assessed in the emission inventory and modeled for ambient air quality impacts.

It is anticipated that under the Proposed Action, the mine would require a Class I operating permit from NDEP. Emissions of criteria pollutants from process sources are summarized in Table 4.7-1.

These are the emissions estimates that are expected to be requested as emission limits in an air permit application. The summary includes all on-site operational emissions from point sources, including thermal sources, combustion sources, and storage silos, as well as process fugitives consisting of crushing and transferring, and conveying and stacking. Not included are commuter vehicles and some on-site vehicular traffic or equipment operation not related to production.



**Table 4.7-1 Process and Ancillary Emissions (tons/year)**

Source Category	PM <sub>2.5</sub>	PM <sub>10</sub>	PM	CO	NO <sub>x</sub>	SO <sub>2</sub>	VOC
Process	21.7	117.5	294.4				
Combustion	1.2	1.2	1.2	7.4	12.3	1.1	1.3

### Area Source Emissions

Distributed (area source) emissions would include fugitive dust emissions from activities such as drilling, blasting, loading, unloading, crushing, wind erosion, travel on haul roads, and excavation. Other area sources would include tailpipe emissions from earth-moving equipment, other equipment and vehicles. It is anticipated that these emissions would comprise the majority of the air quality emissions for the project.

Environmental protection measures for fugitive dust would include dust control using water. Track out pads would be developed to ensure dirt on vehicles is knocked off, limiting re-entrained dust on paved roads. Standard controls for general construction equipment would include speed limits. To minimize fugitive dust, soils would be stabilized as soon as possible after disturbance to limit dust. Construction equipment may be equipped with retrofit controls to reduce exhaust emissions of nitrogen oxides and diesel particulate emissions. Vehicles would be maintained to the manufacturer's specifications. Controls used to manage fugitive emissions would also be applied during material handling processes, such as rock crushing. Estimated area source emissions of criteria pollutants during operations are summarized in Table 4.7-2.

**Table 4.7-2 Fugitive Area Source Potential to Emit (tons/year)**

Source Category	PM <sub>2.5</sub>	PM <sub>10</sub>	PM	CO	NO <sub>x</sub>	SO <sub>2</sub>	VOC
Fugitives	52.2	344.0	1291.5	172.3	217.0	0.7	38.0

### Commuter and Supply Vehicle Emissions

All vehicles accessing the proposed project area would be sources of combustion emissions. This would include workers in vehicles accessing the project area daily as well as deliveries and receipt of supplies. Combustion emissions would include criteria pollutants from vehicle tailpipes. Total vehicle miles were calculated to estimate potential vehicle emissions. Total tailpipe emissions for commuter travel and supply vehicle travel for the Proposed Action were calculated using a ratio of the vehicles used at the Pan Mine and proposed to be used at the Gold Rock Mine Project. The Pan Mine emissions data were derived from the EPA's MOVES model. Emissions are summarized in Table 4.7-3.

**Table 4.7-3 Access and Highway Vehicle Tailpipe Emissions (tons/year)**

Source Category	PM <sub>2.5</sub>	PM <sub>10</sub>	PM	CO	NO <sub>x</sub>	SO <sub>2</sub>	VOC
Highway Vehicle Traffic	1.0	1.0	1.0	20.9	23.1	0.1	2.5
Access Road Vehicle Traffic	0.1	0.1	0.1	2.2	2.1	0.01	0.2

### Greenhouse Gas Emissions

Mine operations that would contribute to GHG emissions would include fuel combustion for process emission sources, tailpipe emissions from vehicles and equipment as well as processes that use electricity. Emissions calculations for direct emissions of GHG from on-site sources are summarized in Table 4.7-4.



**Table 4.7-4 Direct Project GHG Emissions (tons/year)**

Source Category	CO <sub>2e</sub>
Process	8,516
Fugitive	28,384

### Mercury Emissions

Sources of mercury emissions are derived primarily from soil where mercury occurs naturally. Emissions of mercury would be generated during material handling activities such as rock crushing. Mercury would also be generated during the refining (thermal) processes. The Nevada air quality permitting rules require the use of Maximum Achievable Reduction Technology (MACT) for mercury emissions at mine sites that include thermal units. Mercury emissions would also occur from combustion of fossil fuels. Estimated mercury emissions during operations are summarized in Table 4.7-5.

**Table 4.7-5 Proposed Action Mercury Emissions (tons/year)**

Source Category	Mercury
Total	8.41E-03
Thermal	4.28E-03

### Hazardous Air Pollutant Emissions

Sources of HAPs for the Proposed Action would include hydrocarbon combustion, the refining process, and constituents found in fugitive dust from ore and waste rock and process chemicals used on-site. Emissions of HAPs for the proposed action were calculated using AP-42 emissions factors as well as proposed maximum process rates for the facility. The emissions of these pollutants were calculated for the project, as summarized in Table 4.7-6.

**Table 4.7-6 Proposed Action HAPs Emissions (tons/year)**

Pollutant	Emissions
1,3-Butadiene	3.90E-03
Acetaldehyde	8.85E-02
Acrolein	1.28E-02
Benzene	4.35E-01
Dichlorobenzene	1.08E-04
Formaldehyde	1.65E-01
Hexane	1.65E-01
Naphthalene	6.60E-02
Toluene	1.65E-01
POM	7.95E-06
Xylene	1.14E-01
Antimony	9.15E-03
Arsenic	2.40E-01
Beryllium	1.50E-02
Cadmium	1.34E-03
Chromium	7.95E-03



**Table 4.7-6 Proposed Action HAPs Emissions (tons/year)**

Pollutant	Emissions
Cobalt	4.20E-03
Lead	1.80E-02
Manganese	2.25E-01
Mercury	8.85E-03
Nickel	1.80E-02
Phosphorus	2.55E-01
Selenium	2.10E-06
Hydrochloric Acid	1.95E-01
Cyanide Compounds	1.28E-01
Hydrogen Cyanide	3.06E+00
<b>Total HAPs</b>	<b>5.42E+00</b>

### Summary of Emissions Estimates

Impact analysis is based on modeling performed recently for mining projects of similar scale, located in the project vicinity. That modeling was performed with the EPA-recommended AERMOD dispersion model, using meteorological data representative of local dispersion conditions. Peak impacts were predicted at receptors on the project boundary. Estimated ambient concentrations, adjusted to reflect estimated emissions for the project, are summarized in Table 4.7-7. Predicted concentrations indicate compliance with all applicable NAAQS and Nevada air quality standards.

**Table 4.7-7 Model-Predicted Maximum Impacts of Proposed Action**

Pollutant	Averaging Period	Class II Increment ( $\mu\text{g}/\text{m}^3$ )	NAAQS ( $\mu\text{g}/\text{m}^3$ )	Nevada NAAQS ( $\mu\text{g}/\text{m}^3$ )	Modeled Impact ( $\mu\text{g}/\text{m}^3$ )	Background ( $\mu\text{g}/\text{m}^3$ )	Total Impact ( $\mu\text{g}/\text{m}^3$ )
Nitrogen Oxides	Annual	25	100	100	8.7	0	8.7
	1-hr	NA	188	NS	158.1	0	158.1
Sulfur Dioxide	Annual	20	NA	80	NM	NA	NM
	24-hr	91	NA	365	NM	NA	NM
	3-hr	512	1,300	1,300	11.1	0	11.1
	1-hr	NA	196	NS	14.6	0	14.6
Carbon Monoxide	8hr	NA	10,000	10,000	231.3	0	231.3
	1-hr	NA	40,000	40,000	985.8	0	985.8
PM <sub>10</sub>	Annual	17	NA	50	NM	NA	NM
	24-hr	30	150	150	74.8	10.2	85
PM <sub>2.5</sub>	Annual	4	12	NS	1.2	2.4	3.6
	24-hr	9	35	NS	13.4	7.0	20.4
Lead	Rolling 3-Month	NA	0.15	0.15	NM	NM	NM
Ozone	8-hour	NA	146.9	NS	NM	NM	NM
	1-hour	NA	NA	235	NM	NM	NM

Notes:

NM = Not Modeled

NA = Not Applicable

NS = No Standard



## **Climate Change**

Although climate may change in the Plan area over the long term, the effects of these changes are not fully understood or certain. Changes in storm magnitude or frequency induced by climate change could affect various resources over the long term. Higher levels of precipitation could increase soil erosion and alter vegetative species composition over the long term. Conversely, lower levels of precipitation could increase stress on vegetation resulting in changes in communities and the wildlife occupying them. Because ground water use is below annual yield, potential reductions in precipitation resulting from climate change would not affect ground water use.

### ***4.7.4 Northern Power Line Route Alternative***

The Northern Power Line Route Alternative would be expected to result in similar impacts to air quality as the Proposed Action, and even though 33 fewer acres of soil would be disturbed under the Northern Power Line Route Alternative, the difference in impacts would not be noticeable when compared to the Proposed Action.

### ***4.7.5 Southern Power Line Route Alternative***

The Southern Power Line Route Alternative would be expected to result in similar impacts to air quality as the Proposed Action, and even though 34 fewer acres of soil would be disturbed under the Southern Power Line Route Alternative, the difference in impacts would not be noticeable when compared to the Proposed Action.

### ***4.7.6 Northwest Main Access Route Alternative, Northern Power Line Route***

Under this alternative, there would be a temporary increase in the acreage of disturbance in association with the construction. These impacts would only occur during the construction phase and would not occur throughout the mine life. The Northwest Main Access Route Alternative would be expected to result in slightly higher impacts to air quality as compared to the Proposed Action.

Power line pole installation would result in 13 acres of short-term disturbance, compared to 35 acres under the Proposed Action.

Construction of this alternative main access route would result in approximately 10 acres of short-term surface disturbance related to obtaining gravel from two 5-acre pits located along the route. These areas would be reclaimed after completion of road construction.

Several segments of existing roads that already support commercial truck traffic would make up part of the alternative main access route. Other segments of the route would be constructed or widened. Short-term surface disturbance would include approximately 92 acres of road construction and widening along this alternative main access route. In comparison, the Proposed Action main access route was upgraded several years ago, and no new surface disturbance would be required during road maintenance activities.

Overall, 64 greater acres of short-term surface disturbance would occur under this alternative compared to the Proposed Action. Additional impacts due to road upgrades would increase impacts to air quality when compared to the Proposed Action. Long-term impacts would be similar to those described under the Proposed Action.



#### ***4.7.7 Northwest Main Access Route Alternative, Southern Power Line Route***

Under this alternative, there would be a temporary increase in the acreage of disturbance in association with the construction. These impacts would only occur during the construction phase and would not occur throughout the mine life. The Northwest Main Access Route Alternative would be expected to result in slightly higher impacts to air quality as compared to the Proposed Action.

Power line pole installation would result in 14 acres of short-term disturbance, compared to 35 acres under the Proposed Action.

Construction of this alternative main access route would result in approximately 10 acres of short-term surface disturbance related to obtaining gravel from two 5-acre pits located along the route. These areas would be reclaimed after completion of road construction.

Several segments of existing roads that already support commercial truck traffic would make up part of the alternative main access route. Other segments of the route would be constructed or widened. Short-term surface disturbance would include approximately 99 acres of road construction and widening along this alternative main access route. In comparison, the Proposed Action main access route was upgraded several years ago, and no new surface disturbance would be required during road maintenance activities. Additional impacts due to road upgrades would increase impacts to air quality when compared to the Proposed Action.

Overall, 72 greater acres of short-term surface disturbance would occur under this alternative compared to the Proposed Action. Long-term impacts would be similar to those described under the Proposed Action.

#### ***4.7.8 Modified County Road Re-Route Alternative***

The Modified County Road Re-Route Alternative would be expected to result in similar impacts to air quality as the Proposed Action.

Under this alternative, 7 fewer acres would be disturbed by new road construction along the county road re-route. In the future, if White Pine County elects to upgrade the county road re-route, implementing this alternative would disturb 28 acres during road widening activities. In comparison, the Proposed Action would result in 22 acres of disturbance due to road widening. Overall, this alternative could result in 1 less acre of long-term disturbance compared to the Proposed Action.

#### ***4.7.9 Western Tailings Storage Facility Alternative***

The Western Tailings Storage Facility Alternative would be expected to result in similar impacts to air quality as the Proposed Action. The Western TSF footprint would cover 403 acres, compared to a 269-acre footprint for the Proposed Action TSF. Although the Western TSF footprint would be larger, this alternative would result in 118 fewer acres of total disturbance than the Proposed Action. However, the larger footprint size in an unreclaimed condition during operations may be more susceptible to wind erosion of dried tailings causing increased dust in the immediate project area.



#### **4.7.10 No Action Alternative**

The No Action Alternative would not result in an increase in ambient pollutant emissions. No additional impacts or benefits to air quality would be expected to occur beyond the existing or projected pollutant concentrations for ongoing activities in the area. Impacts to air quality from the No Action Alternative would be less than impacts from the Proposed Action.

#### **4.7.11 Additional Monitoring and Mitigation**

No additional monitoring is required. No mitigation measures are required.

### **4.8 VEGETATION, INCLUDING NOXIOUS AND NON-NATIVE, INVASIVE WEEDS AND SPECIAL STATUS PLANTS**

#### **4.8.1 Analysis Areas**

The analysis areas for vegetation are the same as the analysis areas used for soils (Section 4.5.1). The Study Area described in section 3.8 represents approximately 41 percent of the 32,890 acre Proposed Action vegetation analysis area.

#### **4.8.2 Indicators**

Indicators for vegetation resources focus on acreage of vegetation community disturbance. For general vegetation resources and noxious and non-native, invasive weeds, indicators focus on the acreage of disturbed areas and the proximity of existing weeds to the disturbance areas. For special status plant species, indicators focus on the acreage of disturbance of potential habitat, as well as the potential for individual take of special status plants. The following factors were considered in determining effects on vegetation resources, including communities, noxious and non-native, invasive weeds, and special status plant species:

- Magnitude of disturbance or loss;
- Biological importance of the resource;
- Uniqueness or rarity of the resource;
- Federal, state, and/or local protection status of the resource; and
- Susceptibility of the resource to disturbance.

#### **4.8.3 Proposed Action**

##### **Construction**

##### **Vegetation**

Direct impacts of the Proposed Action to vegetation include the removal of approximately 3,500 acres of vegetation during facility construction and operations, and approximately 400 acres of vegetation during exploration activities throughout the Plan area, for a total of approximately 3,950 acres of disturbance. Loss of vegetation would result from the construction of a segment of new road along the proposed county road re-route, construction and widening and maintaining of new mine site roads; pit excavation, construction of the WRDAs, heap leach facility, process facilities and ponds, growth media stockpiles, water supply well and associated infrastructure, the TSF, and shop facilities and yards. Table 4.8-1 shows the estimated long-



term and permanent disturbance acreage within each vegetation community type (Section 3.8; Figure 3.8-1). A long-term loss of 491 acres of vegetation would result from the unreclaimed portions of the Proposed Action (pit, the process pond, stormwater control facilities, sediment basins, and county road re-route (Figure 2.3-15). However, approximately 3,400 acres would be reclaimed concurrently and immediately following the end of mining.

The majority, 57 percent, of disturbance would be in Great Basin Xeric Mixed Sagebrush Shrubland, with 21 percent in Great Basin Pinyon-Juniper Woodland, 10 percent in previously altered areas and the remaining 10 percent occurring in the other vegetative communities. These communities listed above are typical of the Great Basin high desert and are common and widespread throughout and adjacent to the analysis area.

The Proposed Action would likely result in the transition to grass and forb dominated vegetation types in areas following reclamation. It is likely that over the long term shrubs and trees may naturally recolonize disturbed areas. It may take 75 to 100 years for singleleaf pinyon and Utah juniper trees to mature (Barney and Frischknecht 1974). Approximately 10 percent of the analysis area including the process pond, stormwater controls, pit, sedimentation basins, and proposed county road re-route would not be reclaimed and remain unvegetated. Reclamation seed mixtures as provided by the BLM (Table 2.3-7) would be used to establish forage and cover species for livestock grazing, wild horses, and wildlife habitat.

**Table 4.8-1 Disturbance by Vegetation Community Type Under the Proposed Action**

<b>Vegetation Community Type</b>	<b>Proposed Action Analysis Area (acres)</b>	<b>Proposed Action Short-Term Disturbance (acres)<sup>1</sup></b>	<b>Proposed Action Long-Term (Unreclaimed) Disturbance (acres)</b>
Great Basin Pinyon-Juniper Woodland	5,746	746	115
Great Basin Xeric Mixed Sagebrush Shrubland	16,440	2,041	158
Human-Altered Areas	433	368	158
Intermountain Basins Big Sagebrush Shrubland	2,022	204	35
Intermountain Basins Big Sagebrush Steppe	251	2	0
Intermountain Basins Greasewood Flat	7	1	<1
Intermountain Basins Mixed Salt Desert Scrub	1,635	191	25
<b>Total</b>	<b>26,534</b>	<b>3,552</b>	<b>491</b>

**Notes**

1 In addition to this disturbance in known locations, up to approximately 400 acres of vegetation would be disturbed during exploration activities throughout the Plan area.

Indirect impacts to vegetation would include the increased potential for noxious and non-native, invasive weed establishment as described in more detail below. Other indirect impacts would include the short-term loss of forage for wildlife, wild horses, and livestock; potential impacts to wild land fire management; and a potential increase of the erosion potential to soils. These indirect impacts to other resources are described further in the appropriate sections of this EIS.

Vegetation in the analysis area could also be indirectly affected by dust caused by mining activities, and road travel. Dust contributes to “edge effects”; near roads and construction sites. Dust can coat surrounding vegetation and disrupt photosynthesis, respiration, and transpiration of plants, ultimately leading to decreased vegetation productivity (Coffin 2007; Trombulak and Frissell 2000). In turn, this can decrease vegetation quality and viability beyond the actual footprint of direct disturbance.



Under the Proposed Action, buses or vans may be used to shuttle employees from Ely and/or Eureka to the mine site. Workers also could use private or company-owned vehicles to commute to the mine site. Bulk chemicals and supplies would typically be transported to the site by trucks via US 50 and the main access route from either the east (Ely) or west (Eureka) and the major connecting highways including Interstate 80 (I-80), US 93, and SR 278. Table 2.3-5 describes the number of expected shipments for reagents to the site. Currently, no restrictions on delivery times exist, and no restrictions are proposed.

Under the Proposed Action, all workers, contractors, vendors, and visitors would be directed to use the main access route from the north or the proposed county road re-route from the south (Figure 1.1-2); however, a worker, contractor, vendor, or visitor may choose to approach by other roads that lead to the Plan area. To analyze indirect impacts that road use under the Proposed Action could have on vegetation and wildlife, the BLM identified routes that could be used to access the site. Figure 4.8-1 shows several existing and proposed routes that lead from either US 50 or Duckwater Road to the Plan area.

These routes have been assigned route letters A through G. Routes A through E relate to the Proposed Action. Route F relates to the Northwest Main Access Route Alternative, Northern Power Line Route and Route G relates to the Northwest Main Access Route Alternative, Southern Power Line Route. No road use data are available for these routes. Observations over time by various BLM staff indicate that these routes are used occasionally by local residents or recreationists. Traffic may increase over existing levels if any of the proposed mining or oil and gas projects in the region are approved. The BLM estimated route use related to the Gold Rock Mine Project on these routes based on information in the Plan, estimates for vehicle use based on vehicle logs being maintained during construction of the Pan Mine, information provided by Midway (Snell 2014c; Williams 2014g,h), and an estimate for carpooling used for the Mount Hope Mine (Blankenship 2014). Table 4.8-2 presents these route use estimates.

**Table 4.8-2 Additional Daily Trips Under the Proposed Action**

Type of Vehicle	Average Number of Additional Daily Trips Under the Proposed Action									
	Route A		Route B		Route C		Route D		Route E	
	C	O	C	O	C	O	C	O	C	O
vans (v) or busses (b)	6v or 2b	6v or 2b	0	0	0	0	NA	0	0	0
light vehicles	330	262	26	16	6	1 to 2	NA	4	2	1 to 2
medium trucks	0	12	0	0	6	6	NA	0	0	0
heavy trucks	18	12	1 to 2	1 to 2	1 to 2	0	NA	1 to 2	1 to 2	1 to 2
<b>Total</b>	<b>350-354</b>	<b>288-292</b>	<b>26-28</b>	<b>16-18</b>	<b>12-14</b>	<b>6-8</b>	<b>NA</b>	<b>4-6</b>	<b>2-4</b>	<b>2-4</b>

**Notes:**

light vehicles = cars, pickup trucks, SUVs

medium trucks = dual axle or other large supply trucks

heavy vehicles = tractor trailers

Existing roads and proposed county road re-route are shown on 1.1-2.

C = mine construction and exploration phase

O = mine operation and exploration phase

NA = not applicable

Source: Midway 2013a; Snell 2014b,c; Williams 2014g,h.

Traffic levels are often described in terms of daily trips. A daily trip consists of a one-way passage on a road. A vehicle traveling to and from a location on the same route would result in two daily trips on that route. For the Gold Rock Mine Project, traffic on Route A would include up to 354 additional daily trips during construction and up to 292 additional daily trips during



operation. Traffic on Route B would be lower, including up to 28 additional daily trips during construction and up to 18 additional daily trips during operations. Traffic on Route C would be even lower, with up to 14 additional daily trips during construction and up to eight additional daily trips during operations. Route D would not exist during construction, and would include up to six additional daily trips during operations. Traffic would be lowest on Route E, where up to four additional daily trips would occur during both construction and operations (Table 4.8-2).

As indicated in Table 4.8-2, traffic would increase along the main access route. This increased traffic could result in increased edge effects from dust. Edge effects from dust also could increase on routes B, C, D and E, depending on worker, contractor, vendor and visitor traffic use.

Dust control measures would be used during construction and operation. These measures may include use of magnesium chloride or lignin sulfonate. Impacts to vegetation due to use of these compounds is still being researched. A study in north-central Colorado included some shrubland areas dominated by similar genera of plants – rabbitbrush, big sagebrush, shadscale and saltbush. Results from the study indicated that big sagebrush in the vicinity of roads treated with magnesium chloride dust suppressant was not affected. Rabbitbrush had lower percentages of healthy cover along treated roads (Jacobi et al. 2009). The study determined that the effects of magnesium chloride were substantially different between species and between individuals and that additional studies were necessary to fully understand the impacts of dust suppressant applications on vegetation (Jacobi et al 2009). Based on this information, project-related impacts to vegetation would be short-term and limited in extent to the areas immediately adjacent to treated roads.

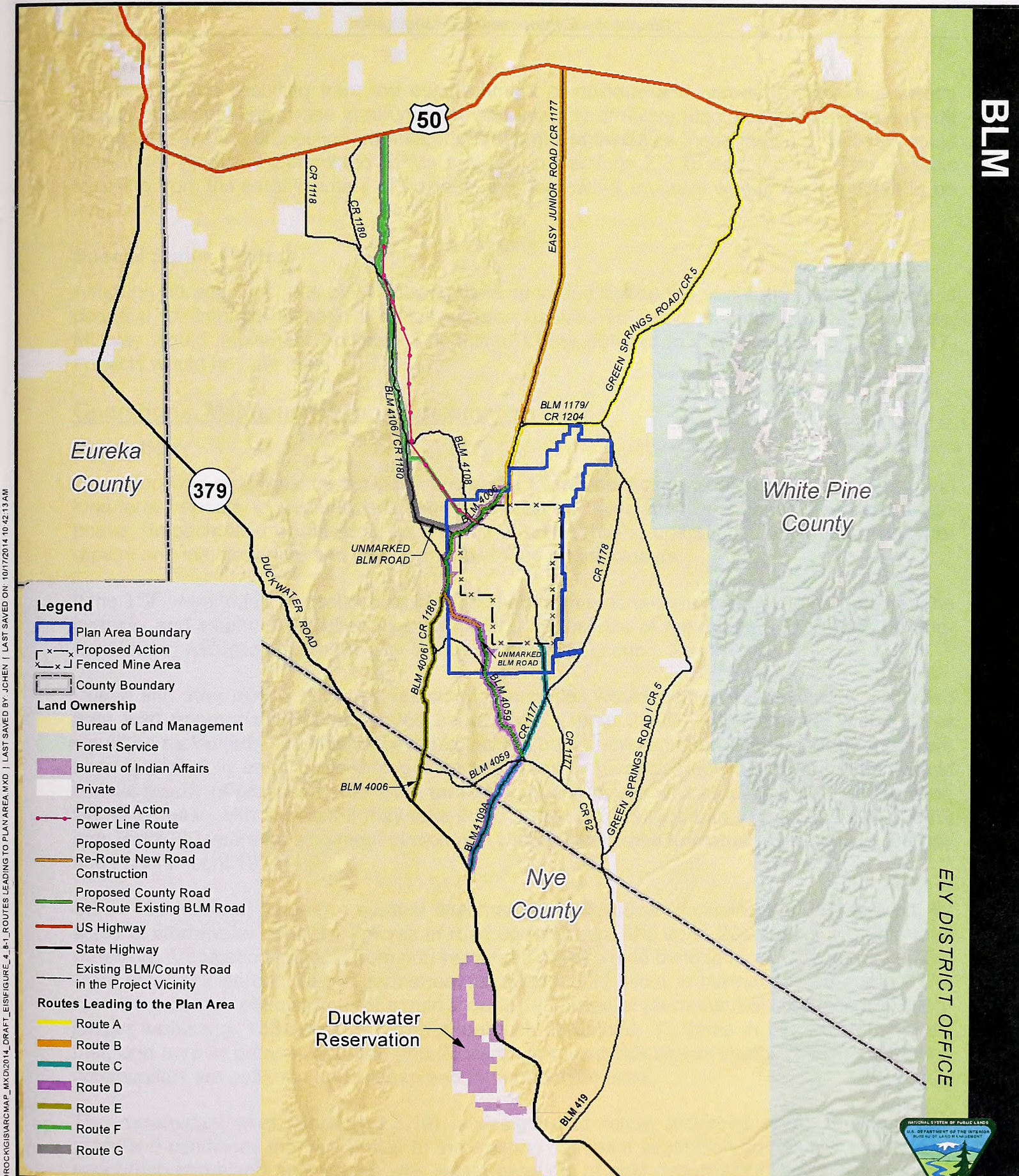
Groundwater drawdown due to pumping for mining activities could indirectly impact deep-rooted vegetation within approximately 5 miles of the Easy Junior water supply well. Few of the dominant plant species in the project area are likely to have root systems dependent on stable groundwater levels in the basin-fill aquifer. Riparian vegetation along the dry drainages in and near the Plan area is believed to be supported by localized, discontinuous shallow alluvial aquifers. Farther east at Green Springs the riparian area is believed to be dependent on a different aquifer fed by the mountains east of the spring, and not on the basin-fill aquifer in which the Easy Junior well is believed to be screened. Potential impacts to vegetation are likely to be short-term and limited in areas where drawdown would occur.

The vegetation communities listed in Table 4.8-1 are typical of the Great Basin high desert and are common and widespread throughout and adjacent to the analysis area. Effects to these vegetation communities would be long term.

### **Noxious and Non-Native, Invasive Weeds**

Impacts to vegetative resources from noxious and non-native, invasive weeds would include a potential for the establishment of weeds resulting from disturbance and the removal of approximately 3,950 acres of native vegetation and the introduction/spreading of weeds during construction or during exploration. Noxious weed introductions could indirectly impact vegetation by reducing habitat quality or changing the trophic structure. The potential for noxious weeds to spread would be highest in newly disturbed areas. Once established, weeds could displace native plant species and change the structure of the habitat (Evangelista et al. 2011, DiTomaso 2000). Noxious weeds could also indirectly affect ecosystem function by changing species composition and changing the physical environment by altering burn cycles and erosion rates (Evangelista et al. 2011; DiTomaso 2000).





**FIGURE 4.8-1**  
**ROUTES LEADING TO THE PLAN AREA**  
**MIDWAY GOLD US INC.**  
**GOLD ROCK MINE PROJECT**

MAPPED DATE: 10/17/2014

0 5 10  
 Miles



U.S. BUREAU OF LAND MANAGEMENT  
 ELY DISTRICT  
 EGAN FIELD OFFICE

NO WARRANTY IS MADE BY THE BUREAU OF LAND MANAGEMENT AS TO THE ACCURACY, RELIABILITY, OR COMPLETENESS OF THESE DATA FOR INDIVIDUAL USE OR AGGREGATE USE WITH OTHER DATA.

Basemap Source: ESRI World Shade Relief Map Service



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Indirect impacts resulting from the establishment of noxious and non-native, invasive weeds include a potential decrease in abundance and integrity of native plant communities as a result of the increase in competition from weeds. To avoid or minimize these impacts, Midway would implement Applicant-Committed EPMs outlined in Sections 2.3.16 and 2.3.17. The impacts resulting from the establishment of noxious and non-native, invasive weeds are expected to be long term.

### **Special Status Plants**

Although no special status plant species were recorded during the vegetation surveys there is potential for impacts to special status species habitat. To avoid or minimize these impacts, Midway would implement Applicant-Committed EPMs outlined in Sections 2.3.16 and 2.3.17. Impacts would be long term.

## **Operations, Maintenance, and Reclamation**

### **Vegetation**

Operation and maintenance activities under the Proposed Action would cause short-term and long-term impacts to vegetation resources similar to those identified under the construction phase. Impacts also would occur as a result of active mining operations, continued access for repairs and maintenance, and long-term monitoring during closure.

If the TSF were to fail, impacts could include short-term or long-term changes to resources. The intensity and extent of the effects would depend on the size of the failure. Short-term or long-term loss or reduction in productivity of vegetation could occur.

During and after mining activities, reclamation activities would include the seeding of disturbed area with appropriate BLM-approved seed mixes (Table 2.3-7). Approximately 3,400 acres would be reclaimed. The seed mix would include both native and non-native species that have been successfully used in reclaiming disturbed areas in the past. Reclamation vegetation would consist mostly of grasses in the short term. Native shrubs, as well as pinyon pine and juniper, would increase with time but it may take 15 to 30 years for sagebrush to mature (BLM 2004b) and 75 to 100 years for singleleaf pinyon and Utah juniper trees to mature (BLM 2004b, Barney and Frischknecht 1974).

Up to 491 acres of long-term surface disturbance would occur, including the 367-acre pit, 82 acres of stormwater controls, 7 acres of road construction, and up to 22 acres of possible road widening. Vegetation impacts from non-reclaimed areas would be long term. One hundred, fifty-eight acres (32 percent of the permanent impacts) would occur in human altered areas. The remaining permanent disturbance would include 114 acres of permanent disturbance in pinyon-juniper woodland, 158 acres in mixed sagebrush shrubland, 35 acres in big sagebrush, less than one acre in greasewood flat, and 25 acres in mixed salt desert shrub. These vegetation communities are common and widespread throughout the area.

The reclamation plan (Section 2.3.16) is designed to return disturbed areas to shrub and grassland conditions that are similar to the existing dominant vegetation community structure of sagebrush shrubland and steppe with lesser amounts of cold desert scrub and pinyon-juniper woodland. The primary revegetation effort would emphasize re-establishment of the native species.



## Noxious and Non-Native, Invasive Weeds

Impacts to vegetative resources from noxious and non-native, invasive weeds would include a potential for the establishment of weeds resulting from continued disturbance and the removal of native vegetation and the introduction/spreading of weeds during operations, maintenance, and reclamation. Indirect impacts resulting from the establishment of noxious and non-native, invasive weeds includes a potential decrease in abundance and integrity of native plant communities as a result of the increase in competition from weeds. To avoid or minimize these impacts, Midway would implement the Applicant-Committed EPMs outlined in Sections 2.3.16 and 2.3.17. The impacts resulting from the establishment of noxious and non-native, invasive weeds during operations, maintenance, and reclamation are expected to be long term.

## Special Status Plants

Direct and indirect impacts of the project on special status plant species would occur. Habitat for special status species was identified within the analysis area. Midway would implement the Applicant-Committed EPMs outlined in Sections 2.3.16 and 2.3.17, minimizing impacts.

### 4.8.4 Northern Power Line Route Alternative

#### Vegetation

The Northern Power Line Route Alternative would result in similar types, intensity and duration of impacts as described under the Proposed Action, except that this alternative would include 7.1 fewer miles of power line and would result in approximately 33 fewer acres of short-term disturbance to vegetation compared to the Proposed Action due to the shorter power line. Table 4.8-3 presents disturbance within vegetation types for the Proposed Action and the Northern Power Line Route Alternative.

**Table 4.8-3 Disturbance by Vegetation Community Type Under the Northern Power Line Route Alternative**

<b>Vegetation Community Type</b>	<b>Northern Power Line Route Alternative Analysis Area (acres)</b>	<b>Northern Power Line Route Alternative Short-Term Disturbance<sup>1</sup> (acres)</b>	<b>Northern Power Line Route Alternative Long-Term Disturbance (acres)</b>
Great Basin Pinyon-Juniper Woodland	5,661	728	114
Great Basin Xeric Mixed Sagebrush Shrubland	16,366	2,011	158
Human-Altered Areas	433	367	158
Intermountain Basins Big Sagebrush Shrubland	2,019	203	35
Intermountain Basins Big Sagebrush Steppe	245	<1	0
Intermountain Basins Greasewood Flat	7	<1	<1
Intermountain Basins Mixed Salt Desert Scrub	1,629	188	25
<b>Total</b>	<b>26,361</b>	<b>3,499</b>	<b>491</b>

Notes:

<sup>1</sup> In addition to this disturbance in known locations, up to approximately 400 acres of vegetation would be disturbed during exploration activities throughout the Plan area.

## Noxious and Non-Native Invasive Weeds

Impacts from noxious weeds under the Northern Power Line Route Alternative would be similar to those under the Proposed Action, except that 33 fewer acres would be disturbed.



### **Special Status Plants**

Direct and indirect impacts to special status plant species under this alternative would be similar to those under the Proposed Action.

#### ***4.8.5 Southern Power Line Alternative***

### **Vegetation**

The Southern Power Line Route Alternative would result in similar types, intensity and duration of impacts as described under the Proposed Action, except that this alternative would include a power line that is 6.7 miles shorter, and would result in approximately 34 fewer acres of disturbance to vegetation due to the shorter power line. Table 4.8-4 presents areas of disturbance within vegetation types for the Proposed Action and the Southern Power Line Route Alternative.

**Table 4.8-4 Disturbance by Vegetation Community Type Under the Southern Power Line Route Alternative**

<b>Vegetation Community Type</b>	<b>Southern Power Line Route Alternative Analysis Area (acres)</b>	<b>Southern Power Line Route Alternative Short-Term Disturbance<sup>1</sup> (acres)</b>	<b>Southern Power Line Route Alternative Long-Term Disturbance (acres)</b>
Great Basin Pinyon-Juniper Woodland	5,646	726	114
Great Basin Xeric Mixed Sagebrush Shrubland	16,390	2,029	158
Human-Altered Areas	433	368	158
Intermountain Basins Big Sagebrush Shrubland	2,022	203	35
Intermountain Basins Big Sagebrush Steppe	245	<1	0
Intermountain Basins Greasewood Flat	7	<1	<1
Intermountain Basins Mixed Salt Desert Scrub	1,632	191	25
<b>Total</b>	<b>26,375</b>	<b>3,519</b>	<b>491</b>

**Notes**

<sup>1</sup> In addition to this disturbance in known locations, up to approximately 400 acres of vegetation would be disturbed during exploration activities throughout the Plan area.

### **Noxious and Non-native, Invasive Weeds**

Impacts from noxious weeds under the Northern Power Line Route Alternative would be similar to those under the Proposed Action, except that 34 fewer acres would be disturbed.

### **Special Status Species**

Direct and indirect impacts to special status plant species under this alternative would be similar to those under the Proposed Action.

#### ***4.8.6 Northwest Main Access Route Alternative, Northern Power Line Route***

### **Vegetation**

The Northwest Main Access Route Alternative, Northern Power Line Route would result in similar types, intensity and duration of impacts as described under the Proposed Action. However, under this alternative, a new access route would be established, involving additional surface disturbance during the construction or widening of roads.



Power line pole installation would result in 13 acres of short-term disturbance, compared to 35 acres under the Proposed Action.

Construction of this alternative main access route would result in approximately 10 acres of short-term surface disturbance related to obtaining gravel from two 5-acre pits located along the route. These areas would be reclaimed after completion of road construction.

Several segments of existing roads that already support commercial truck traffic would make up part of the alternative main access route. Other segments of the route would be constructed or widened. Short-term surface disturbance would include approximately 92 acres of road construction and widening along this alternative main access route. In comparison, the Proposed Action main access route was upgraded several years ago, and no new surface disturbance would be required during road maintenance activities.

Overall, 64 greater acres of short-term surface disturbance would occur under this alternative compared to the Proposed Action. Long-term impacts would be similar to those described under the Proposed Action. Table 4.8-5 presents areas of disturbance within vegetation types for the Proposed Action and the Northwest Main Access Route, Northern Power Line.

Under the Northwest Main Access Route Alternative, Northern Power Line Route, an additional route would be developed and used as the main access route. This route has been labeled Route F (Figure 4.8-1). Under this alternative, road use would differ from that described under the Proposed Action. All workers, contractors, vendors and visitors would be directed to use the Northwest Main Access Route Alternative, Northern Power Line Route (Route F, Figure 4.8-1) rather than the main access route (Route A) (Figure 4.8-1); however, Routes A through E follow public roads that provide access to public and private lands and would remain open throughout the life of the mine. A worker, contractor, vendor or visitor may choose to approach by one of these other routes that lead to the Plan area. Table 4.8-6 presents the estimated average number of additional daily trips related to the Gold Rock Mine Project under either of the Northwest Main Access Route alternatives, based on information in the Plan, vehicle logs being maintained during construction of the Pan Mine, information provided by Midway (Snell 2014c; Williams 2014g,h), and an estimate for carpooling used for the Mount Hope Mine (Blankenship 2014).

Under this alternative, traffic on Route F (Figure 4.8-1) would include up to 354 additional daily trips during construction and up to 292 additional daily trips during operation. Traffic on Route A would be lower, including up to 28 additional daily trips during construction and 16 additional daily trips during operation. Traffic on Route B would be lower still, including up to 8 additional daily trips during construction and up to 6 additional daily trips during operations. Traffic on Route C would be even lower, with up to 14 additional daily trips during construction and up to eight additional daily trips during operations (similar to use under the Proposed Action). Route D would not exist during construction, and would include up to six additional daily trips during operations (similar to use under the Proposed Action). Traffic would be lowest on Route E, where up to four additional daily trips would occur during both construction and operations (similar to use under the Proposed Action) (Table 4.8-6).

Edge effects from dust could occur along the alternative main access route. Edge effects from dust could increase on routes A, B, C, D and E, depending on worker, contractor, vendor and visitor traffic use.

The vegetation communities listed in Table 4.8-5 are typical of the Great Basin high desert and are common and widespread throughout and adjacent to the analysis area. Effects to these vegetation communities would be long term.



Table 4.8-5 Disturbance by Vegetation Community Type Under the Northwest Main Access Route Alternatives

Vegetation Community Type	Northwest Main Access Route Alternative, Northern Power Line Route Analysis Area (acres)	Northwest Main Access Route Alternative, Northern Power Line Route Short-Term Disturbance <sup>1</sup> (acres)	Northwest Main Access Route Alternative, Northern Power Line Route Long-Term Disturbance (acres)	Northwest Main Access Route Alternative, Southern Power Line Route Analysis Area (acres)	Northwest Main Access Route Alternative, Southern Power Line Route Short-Term Disturbance <sup>1</sup> (acres)	Northwest Main Access Route Alternative, Southern Power Line Route Long-Term Disturbance (acres)
Great Basin Pinyon-Juniper Woodland	6,527	747	115	6,366	740	115
Great Basin Xeric Mixed Sagebrush Shrubland	14,673	2,067	155	15,055	2,080	155
Human-Altered Areas	426	368	158	426	368	158
Intermountain Basins Big Sagebrush Shrubland	1,802	221	35	1,871	220	35
Intermountain Basins Big Sagebrush Steppe	185	4	<1	182	4	<1
Intermountain Basins Greasewood Flat	13	<1	<1	13	<1	<1
Intermountain Basins Mixed Salt Desert Scrub	1,598	193	25	1,614	198	25
<b>Total</b>	<b>25,223</b>	<b>3,601</b>	<b>490</b>	<b>25,527</b>	<b>3,610</b>	<b>490</b>

## Notes

1 In addition to this disturbance in known locations, up to approximately 400 acres of vegetation would be disturbed during exploration activities throughout the Plan area.



**Table 4.8-6 Additional Daily Trips Under the Northwest Main Access Route Alternatives (Northern or Southern Power Line Route)**

Type of Vehicle	Average Number Of Additional Daily Trips Under Northwest Main Access Route Alternative													
	Route F		Route G		Route A		Route B		Route C		Route D		Route E	
	C	O	C	O	C	O	C	O	C	O	C	O	C	O
vans (v) or busses (b)	3v or 1b	0	3v or 1b	0	0	0	0	0	0	0	NA	0	0	0
light vehicles	165	131	165	131	13	8	3	2	3	<1	NA	2	1	<1
medium trucks	0	6	0	6	0	0	0	0	3	3	NA	0	0	0
heavy trucks	9	6	9	6	<1	<1	<1	<1	<1	<1	NA	<1	<1	<1
<b>Total</b>	<b>175-177</b>	<b>144-146</b>	<b>175-177</b>	<b>144-146</b>	<b>13-14</b>	<b>7-8</b>	<b>3-4</b>	<b>2-3</b>	<b>6-7</b>	<b>3-4</b>	<b>NA</b>	<b>2-3</b>	<b>1-2</b>	<b>1-2</b>

**Notes:**

light vehicles = cars, pickup trucks, SUVs

medium trucks = dual axle or other large supply trucks

heavy vehicles = tractor trailers

Existing roads and proposed county road re-route are shown on 1.1-2.

C = mine construction phase

O = mine operation phase

NA = not applicable

Sources: Midway 2013a; Snell 2014b,c; Williams 2014g,h



### **Noxious and Non-Native Invasive Weeds**

Impacts from noxious weeds under the Northwest Main Access Route Alternative would be similar to those under the Proposed Action, except that this alternative would result in an additional 64 acres of long-term disturbance.

### **Special Status Plants**

Direct and indirect impacts to special status plant species under this alternative would be similar to those under the Proposed Action.

## ***4.8.7 Northwest Main Access Route Alternative, Southern Power Line Route***

### **Vegetation**

The Northwest Main Access Route Alternative, Southern Power Line Route would result in similar types, intensity and duration of impacts as described under the Proposed Action. However, under this alternative, a new access route would be established involving additional surface disturbance during the construction or widening of roads.

Power line pole installation would result in 14 acres of short-term disturbance, compared to 35 acres under the Proposed Action.

Construction of this alternative main access route would result in approximately 10 acres of short-term surface disturbance related to obtaining gravel from two 5-acre pits located along the route. These areas would be reclaimed after completion of road construction.

Several segments of existing roads that already support commercial truck traffic would make up part of the alternative main access route. Other segments of the route would be constructed or widened. Short-term surface disturbance would include approximately 99 acres of road construction and widening along this alternative main access route. In comparison, the Proposed Action main access route was upgraded several years ago, and no new surface disturbance would be required during road maintenance activities.

Overall, 72 greater acres of short-term surface disturbance would occur under this alternative compared to the Proposed Action. Long-term impacts would be similar to those described under the Proposed Action. Table 4.8-5 presents areas of disturbance within vegetation types for the Proposed Action and the Northwest Main Access Route Alternative, Southern Power Line.

Under the Northwest Main Access Route Alternative, Southern Power Line Route, an additional route would be developed and used as the main access route. This route has been labeled Route G (Figure 4.8-1). Its availability during the construction and operation phases under this alternative is described below.

Under this alternative, route use would differ from that described under the Proposed Action, and would be similar to route use described under the Northwest Main Access Route, Northern Power Line Route described above and summarized in Table 4.8-6. Edge effects from dust could occur along the alternative main access route. Edge effects from dust could increase on routes A, B, C, D and E, depending on worker, contractor, vendor and visitor traffic use.

The vegetation communities listed in Table 4.8-5 are typical of the Great Basin high desert and are common and widespread throughout and adjacent to the analysis area. Effects to these vegetation communities would be long term.



## **Noxious and Non-Native Invasive Weeds**

Impacts from noxious weeds under the Northwest Main Access Route Alternative, Southern Power Line Route would be similar to those under the Proposed Action, except that this alternative would result in an additional 72 acres of long-term disturbance.

## **Special Status Plants**

Direct and indirect impacts to special status plant species under this alternative would be similar to those described under the Proposed Action.

### ***4.8.8 Modified County Road Re-Route Alternative***

## **Vegetation**

The Modified County Road Re-Route Alternative would result in similar types of impacts to those described under the Proposed Action, except that under this alternative, if White Pine County decides to widen this route, 1 less acre of long-term disturbance to vegetation would occur compared to the Proposed Action. The slight difference in disturbance from the Proposed Action is due to possible road widening along a greater length of existing county road on the Modified County Road Re-Route. Table 4.8-7 presents areas of disturbance within vegetation types for the Proposed Action and the Modified County Road Re-Route Alternative.

**Table 4.8-7 Disturbance by Vegetation Community Type Under the Modified County Road Re-route Alternative**

<b>Vegetation Community Type</b>	<b>Modified County Road Re-route Alternative Analysis Area (acres)</b>	<b>Modified County Road Re-route Short-Term Disturbance<sup>1</sup> (acres)</b>	<b>Modified County Road Re-route Long-Term Disturbance (acres)</b>
Great Basin Pinyon-Juniper Woodland	5747	746	115
Great Basin Xeric Mixed Sagebrush Shrubland	16917	2,038	155
Human-Altered Areas	433	369	158
Intermountain Basins Big Sagebrush Shrubland	2,063	205	36
Intermountain Basins Big Sagebrush Steppe	251	2	<1
Intermountain Basins Greasewood Flat	17	<1	<1
Intermountain Basins Mixed Salt Desert Scrub	1,842	194	27
<b>Total</b>	<b>27,268</b>	<b>3,552</b>	<b>490</b>

**Notes**

<sup>1</sup> In addition to this disturbance in known locations, up to approximately 400 acres of vegetation would be disturbed during exploration activities throughout the Plan area.

## **Noxious and Non-Native Invasive Weeds**

Impacts from noxious weeds under the Modified County Road Re-Route Alternative would be similar to those under the Proposed Action, except that 1 less acre of long-term disturbance would occur if White Pine County decides to widen the roads.

## **Special Status Plants**

Direct and indirect impacts to special status plant species under this alternative would be similar to those under the Proposed Action.



### 4.8.9 Western Tailings Storage Facility Alternative

#### Vegetation

Under this alternative, the Western Tailing Storage Facility Alternative would result in similar types, intensity and duration of impacts as described under the Proposed Action. However, a slightly different layout of the mining facilities would result in approximately 118 fewer acres of short-term disturbance to vegetation compared to the Proposed Action. In addition, the long-term impacts to vegetation under this alternative would be 453 acres, 38 fewer acres than under the Proposed Action due to a more compact facility footprint. Table 4.8-8 presents areas of disturbance within vegetation types for the Proposed Action and the Western Tailings Storage Facility Alternative.

#### Noxious and Non-Native Invasive Weeds

Impacts from noxious weeds under the Western Tailings Storage Facility Alternative would be similar to the Proposed Action, except that this alternative would result in 118 fewer acres of total disturbance, and 38 fewer acres of long-term disturbance due to the smaller facility footprint.

#### Special Status Plants

Direct and indirect impacts to special status plant species under this alternative would be similar to the Proposed Action, except that this alternative would result in 118 fewer acres of total disturbance, and 38 fewer acres of long-term disturbance due to the smaller facility footprint.

**Table 4.8-8 Disturbance by Vegetation Community Type Under the Western Tailings Storage Facility Alternative**

<b>Vegetation Community Type</b>	<b>Western Tailings Storage Facility Analysis Area (acres)</b>	<b>Western Tailings Storage Facility Short-Term Disturbance<sup>1</sup> (acres)</b>	<b>Western Tailings Storage Facility Long-Term Disturbance (acres)</b>
Great Basin Pinyon-Juniper Woodland	5,746	599	109
Great Basin Xeric Mixed Sagebrush Shrubland	16,440	1,866	120
Human-Altered Areas	433	357	157
Intermountain Basins Big Sagebrush Shrubland	2,022	272	32
Intermountain Basins Big Sagebrush Steppe	251	2	0
Intermountain Basins Greasewood Flat	7	1	<1
Intermountain Basins Mixed Salt Desert Scrub	1,635	316	36
<b>Total</b>	<b>2,6534</b>	<b>3,414</b>	<b>453</b>

**Notes**

<sup>1</sup> In addition to this disturbance in known locations, up to approximately 400 acres of vegetation would be disturbed during exploration activities throughout the Plan area.



#### **4.8.10 No Action Alternative**

Under the No Action Alternative, the Proposed Action would not be constructed and there would be no associated project impacts on vegetation resources excluding the previously authorized exploration activities. Impacts of the authorized exploration activities were described in the EA for those activities (BLM 2012h).

#### **4.8.11 Additional Monitoring and Mitigation**

##### **Vegetation**

No additional monitoring measures are required. No mitigation measures are required.

##### **Noxious and Non-Native, Invasive Weeds**

No additional monitoring measures are required. No mitigation measures are required.

##### **Special Status Plants**

No additional monitoring measures are required. No mitigation measures are required.

### **4.9 WILDLIFE RESOURCES, INCLUDING MIGRATORY BIRDS AND SPECIAL STATUS WILDLIFE**

#### **4.9.1 Analysis Areas**

The analysis areas for wildlife and fisheries, including migratory birds and special status species other than eagles, are described below. The analysis areas for eagles also are described below.

The analysis areas were evaluated using a combination of existing resources, including information provided by the BLM, NDOW, USFWS, NNHP, and extensive biological surveys conducted by EcoSynthesis and Wildlife Resource Consultants (WRC) in 2011, 2012, and 2013 (EcoSynthesis and WRC 2012a, 2012b, and 2013a). In 2011, EcoSynthesis and WRC conducted baseline biological surveys within the 6,074-acre 2011 Gold Rock Exploration Plan of Operations area (EcoSynthesis and WRC 2012a). In 2012, baseline studies were expanded to cover a 12,400-acre area as the 2011 Gold Rock Exploration Plan of Operations area was expanded (EcoSynthesis and WRC 2012b). In 2013, baseline studies were further expanded to cover approximately 13,405 acres within the Plan area (EcoSynthesis and WRC 2013a). Baseline studies also included buffers of the Plan area that varied for different species. The methodologies used for baseline studies are presented in EcoSynthesis and WRC (2012a, 2012b, and 2013a). As noted in section 3.8, the area covered in these baseline studies is referred to as the Study Area, and the 2013 Study Area (which is the largest and encompasses the areas studied in 2011 and 2012) is shown on Figure 3.8-1.

#### **Wildlife and Fisheries, Including Migratory Birds and Special Status Species Other Than Eagles**

##### **Proposed Action**

The analysis area for wildlife and fisheries, including migratory birds and special status species other than eagles occurs within:



- The Plan area.
- A 1,968-foot-wide (600-meter-wide) buffer along the center line of the power line to the second water supply well to analyze potential indirect impacts of line-of-sight view by sage-grouse. For impact analysis purposes, specialists assumed that the proposed second well would be installed 0.5-mile south of the existing Easy Junior water supply well.
- A 1,968-foot-wide (600-meter-wide) buffer along the center line for the Proposed Action power line to analyze potential indirect impacts of line-of-sight view by sage-grouse.
- Four-mile-wide buffers (2 miles on each side of the center line) to analyze potential direct impacts to sage-grouse due to noise along segments of the existing and new road on the proposed county road re-route to account for disturbance if, in the future, White Pine County decides to widen the road.
- Four-mile-wide buffers along the main access route (Route A) and other existing roads that lead to the Plan area to analyze potential direct impacts to sage-grouse due to noise.

#### **Northern Power Line Route Alternative**

The analysis area is similar to the Proposed Action analysis area, with one modification:

- Inclusion of the Northern Power Line Route Alternative and a 1,968-foot-wide (600-meter-wide) buffer along the center line, instead of the Proposed Action power line route and buffer.

#### **Southern Power Line Route Alternative**

The analysis area is similar to the Proposed Action analysis area, with one modification:

- Inclusion of the Southern Power Line Route Alternative and a 1,968-foot-wide (600-meter-wide) buffer along the center line, instead of the Proposed Action power line route and buffer.

#### **Northwest Main Access Route Alternative, Northern Power Line Route**

The analysis area is similar to the Proposed Action analysis area, with two modifications:

- Inclusion of the Northern Power Line Route Alternative and a 1,968-foot-wide (600-meter-wide) buffer along the center line of the power line route alternative, instead of the Proposed Action power line route and buffer
- Addition of a 4-mile-wide buffer (2 miles on each side of the center line) along the Northwest Main Access Route Alternative.

#### **Northwest Main Access Route Alternative, Southern Power Line Route**

The analysis area is similar to the Proposed Action analysis area, with two modifications:

- Inclusion of the Southern Power Line Route Alternative and a 1,968-foot-wide (600-meter-wide) buffer along the center line of each power line route alternative, instead of the Proposed Action power line route and buffer



- Addition of a 4-mile-wide buffer (2 miles on each side of the center line) along the Northwest Main Access Route Alternative.

### **Modified County Road Re-Route Alternative**

The analysis area is similar to the Proposed Action analysis area, with one modification:

- Inclusion of a 4-mile-wide buffer (2 miles on each side of the center line) along a segment of existing BLM 4059 from BLM 4006/CR 1180 to the proposed county road re-route, instead of the 4-mile-wide buffer along the new road segment and unmarked BLM road.

### **Western Tailings Storage Facility Alternative**

The analysis area is the same as the Proposed Action analysis area.

### **No Action Alternative**

The analysis area is the approved, amended 2011 Exploration Plan area.

### **Eagles**

The analysis area for eagles is described below.

### **Proposed Action**

The analysis area occurs within the Plan area plus the area within a 10-mile radius of the Plan area boundary and the Proposed Action power line route.

### **Northern Power Line Route Alternative**

The analysis area is similar to the Proposed Action analysis area, with one modification:

- Inclusion of the area within a 10-mile radius of the Northern Power Line Route Alternative instead of the Proposed Action power line route.

### **Southern Power Line Route Alternative**

The analysis area is similar to the Proposed Action analysis area, with one modification:

- Inclusion of the area within a 10-mile radius of the Southern Power Line Route Alternative instead of the Proposed Action power line route.

### **Northwest Main Access Route Alternative, Northern Power Line Route**

The analysis area is similar to the Proposed Action analysis area, with one modification:

- Inclusion of the area within a 10-mile radius of the Northern Power Line Route Alternative instead of the Proposed Action power line route.

### **Northwest Main Access Route Alternative, Southern Power Line Route**

The analysis area is similar to the Proposed Action analysis area, with one modification:

- Inclusion of the area within a 10-mile radius of the Southern Power Line Route Alternative instead of the Proposed Action power line route.



**Modified County Road Re-Route Alternative**

The analysis area is the same as the Proposed Action analysis area.

**Western Tailings Storage Facility Alternative**

The analysis area is the same as the Proposed Action analysis area.

**No Action Alternative**

The analysis area is the approved, amended 2011 Exploration Plan area.

**4.9.2 Indicators**

Construction and operation of the project may have short- and long-term impacts on wildlife, including migratory birds and special status species. Of particular interest are potential impacts to greater sage-grouse, a candidate for federal listing with preliminary BLM priority habitat mapped within and near the Plan area (Figures 4.9-1 through 4.9-4). Provided in this section is a detailed impact analysis on wildlife from implementation of the Proposed Action, one of seven action alternatives, or the No Action Alternative.

In general, impacts to wildlife may include avoidance of the Plan area because of habitat removal, degradation/alteration, and fragmentation; increased noise and visual disturbances; and alteration of the existing predatory/prey composition. Some wildlife may also acclimate to mine activities and return to use available habitats in and near the Plan area. Wildlife would also be subject to mortality from collisions with vehicles and project infrastructure (e.g., a bird may fly into a building or transmission line). As summarized in Table 4.8-2, traffic is anticipated to increase on the existing main access route, as well as on other roads accessing the Plan area (routes B, C, D, and E, Figure 4.8-1) because workers, contractors, vendors, or visitors may choose to approach by other roads that lead to the Plan area. Impacts are generally expected to be short-term during construction and operations (for the life of the project or until reclamation) and long-term impacts are those that would extend past the active reclamation phase.

The following indicators were considered for analysis of potential impacts to wildlife, including migratory birds and special status species:

- acres of disturbance and the proximity of the Plan area to high value habitat locations such as big game crucial range/migration pathways, raptor nests, and greater sage-grouse leks;
- location of access roads and transmission lines in relation to high value habitat locations;
- number of transmission line poles and other tall structures within line-of sight view from greater sage-grouse leks;
- number of vehicle/big game collisions;
- Additional noise disturbance from vehicular traffic and proposed operations in relation to high value habitat locations; and
- acres of various wildlife habitats (e.g., vegetation community types) directly impacted and the juxtaposition of those habitats to the Plan area.



### **4.9.3 Proposed Action**

Impacts to wildlife under the Proposed Action are described separately for the construction and operation/maintenance/reclamation phases of the project. Categories of wildlife described below have potential to breed/nest in, forage in, pass through, or otherwise inhabit the analysis area.

#### **Construction**

Impacts to wildlife during construction would generally be short-term, lasting only for the duration of the construction phase itself. Longer-term impacts, such as habitat removal (where it may take many years following active reclamation for vegetation to return to pre-disturbance conditions), would commence during construction but would continue into operations and last for the life of the project.

Total direct land disturbance associated with the Proposed Action would be approximately 3,950 acres. This disturbance would include direct disturbance from facility construction (approximately 3,500 acres), along with exploration disturbance within the Plan area. Six vegetation communities/wildlife habitats would be impacted during construction. Anticipated acres of disturbance to the five most prominent vegetation communities in the analysis area are: Great Basin Xeric Mixed Sagebrush Shrubland (2,041 acres), Great Basin Pinyon-Juniper Woodland (746 acres), Human-Altered Areas (368 acres), Intermountain Basins Big Sagebrush Shrubland (204 acres), and Intermountain Basins Mixed Salt Desert Scrub (191 acres). Additional information on impacts to vegetation is available in Section 4.8.

Dust control measures during construction and operation may include use of magnesium chloride or lignin sulfonate. The impacts to wildlife due to use of these compounds is still being researched; however, potential impacts to vegetation may impact the quality of wildlife habitat immediately adjacent to roadways. Therefore, wildlife, particularly less mobile species that use affected habitats close to roads, may be impacted in the short-term.

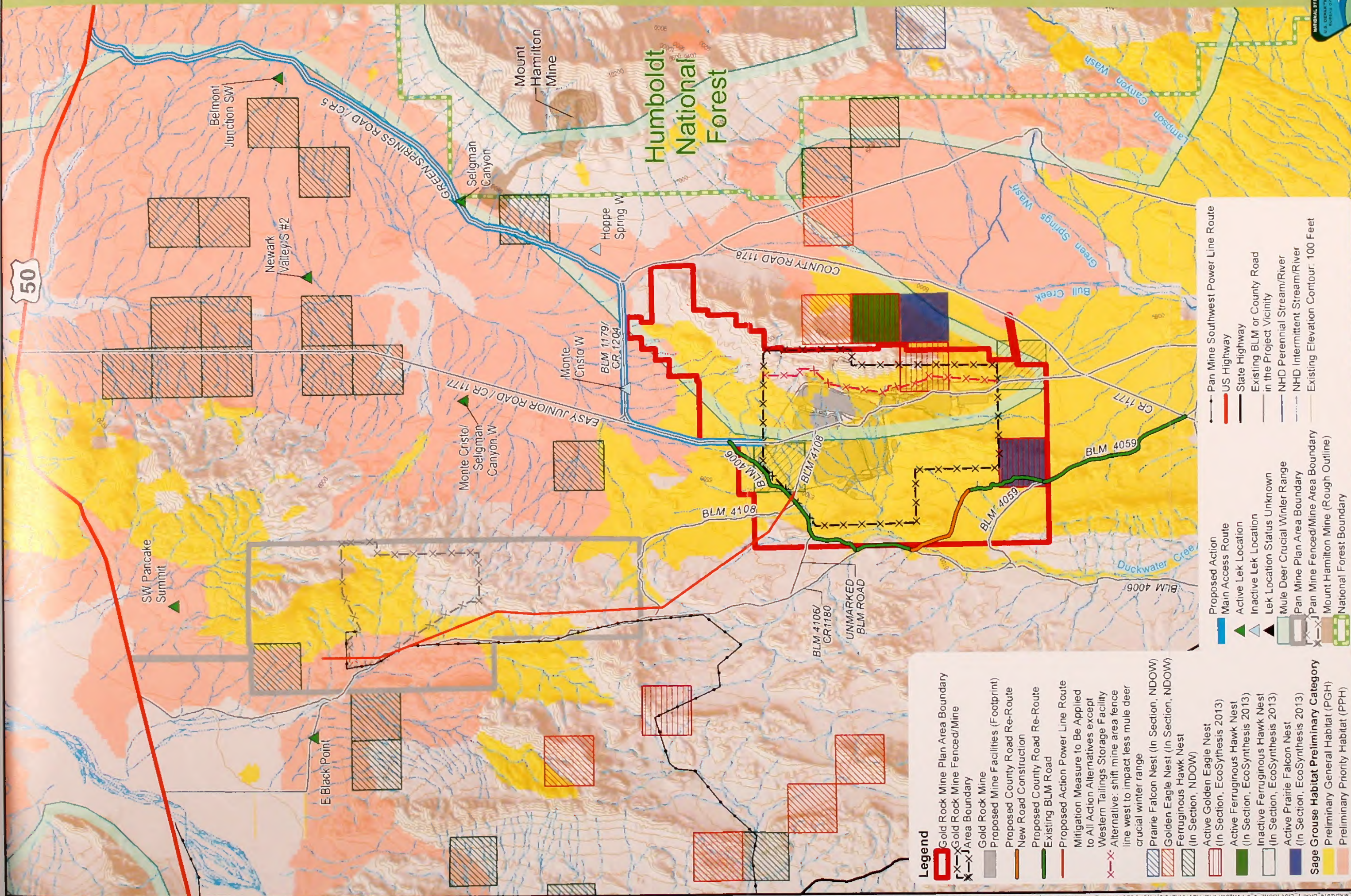
Noise-generating activities associated with the Proposed Action include earthmoving, equipment operation, blasting within the mine area or along the Proposed Action power line route, and vehicular traffic. The increased human activity and noise associated with construction activities would likely cause wildlife to temporarily avoid the area and displace into adjacent, undisturbed suitable habitat causing increased competition for resources.

#### **Big Game**

The wildlife analysis area for the Proposed Action includes year-round, crucial summer, winter, and crucial winter range for mule deer (Figure 3.9-2) and year-round, winter, and crucial winter range for pronghorn antelope (NDOW 2014) (Figure 3.9-3). The Proposed Action will not impact elk or bighorn sheep range, as mapped by NDOW (2014); therefore, only impacts to mule deer and pronghorn antelope and their habitats are described below. Baseline conditions for big game are described in Section 3.9.2.

Direct impacts could include removal of habitat during surface disturbance, installing fencing within the habitat, and noise and visual disturbances that cause big game to avoid the area in and around the mine. Indirect impacts could include increased competition for forage and other resources as deer and pronghorn are displaced into surrounding areas.

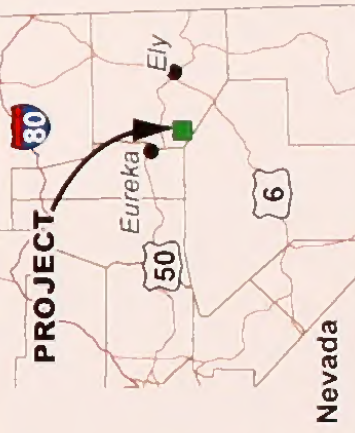




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**FIGURE 4.9-1**  
**WILDLIFE IMPACT ANALYSIS,**  
**PROPOSED ACTION**  
**MIDWAY GOLD US INC.**  
**GOLD ROCK MINE PROJECT**

MAPPEO DATE: 10/17/2014

0 2 4 Miles







Mule deer crucial summer range accounts for approximately 614 acres of the wildlife analysis area under the Proposed Action. No surface disturbance is planned within mule deer crucial summer range. Crucial winter and winter ranges cover approximately 3,541 acres and 27,087 acres of the wildlife analysis area, respectively. Figure 4.9-1 shows mule deer crucial winter range in relation to other wildlife resources and proposed project features. Year-round range covers approximately 27,279 acres of the wildlife analysis area. Surface disturbance within crucial winter, winter, and year-round ranges per project feature is summarized below in Table 4.9-1.

**Table 4.9-1 Mule Deer Range Surface Disturbance under the Proposed Action**

Type of Mule Deer Range	Herd Name	Project Feature	Surface Disturbance by Project Feature (acres)	Total Surface Disturbance <sup>1</sup> (acres)
Crucial Winter	Rubys	Ancillary	300	2,266
		Inter Facility	695	
		North Waste Rock Disposal Area	266	
		Pit	367	
		Process Facility	49	
		Road	121	
		South Waste Rock Disposal Area	114	
		Tailings	269	
		Transmission Line	15	
		Water Pipeline Corridor	71	
Year-round	Pancake Range	Ancillary	16	84
		County Road Re-Route New Road Construction	7	
		County Road Re-Route Widen Existing Road	15	
		Inter Facility	9	
		Power Poles	25	
		Proposed Action Power Line Service Rd	11	
		Road	1	
			Total	2,350

**Notes**

<sup>1</sup> In addition to this disturbance in known locations, up to approximately 400 acres of vegetation would be disturbed during exploration activities throughout the Plan area.

Source: NDOW 2014

Pronghorn antelope crucial winter and winter ranges account for approximately 238 acres and 5,518 acres of the Proposed Action wildlife analysis area, respectively. No surface disturbance is planned in crucial winter and winter range. Year-round range covers approximately 131,242 acres of the analysis area. Surface disturbance to year-round range by project feature is summarized below in Table 4.9-2.

Wildlife-friendly fencing installed around the perimeter of the mine area would allow mule deer or pronghorn antelope to access most of the mine area. Eight-foot chain-link fencing would be installed around the process ponds to prevent wildlife from entering the area. Four-strand barbed wire fence would be installed around the tailings storage facility and safety berms would be installed around the pit to deter wildlife from entering the area.



Increased human activity and noise during construction may influence mule deer and pronghorn antelope to temporarily avoid the Plan area. The potential impacts of noise on these species would depend on the spatial relationship between the noise source and noise-sensitive receptors. Noise-generating activities associated with the Proposed Action during construction would generally include earthmoving activities, operation of equipment, and vehicular/commercial truck traffic.

**Table 4.9-2 Pronghorn Antelope Range Surface Disturbance under the Proposed Action**

<b>Pronghorn Antelope Range</b>	<b>Project Feature</b>	<b>Sum of Disturbance by Project Feature (rounded to whole number)<sup>1</sup></b>
Year-round	Ancillary	420
	County Road Re-Route New Road Construction	7
	County Road Re-Route Widen Existing Road	22
	Heap Leach Pad	430
	Inter Facility	1,026
	North Waste Rock Disposal Area	266
	Pit	367
	Power Poles	23
	Process Facility	74
	Process Pond	25
	Proposed Action Power Line Service Rd	10
	Road	180
	Second Water Well and Infrastructure	6
	South Waste Rock Disposal Area	280
	Tailings	269
	Transmission Line	32
	Water Pipeline Corridor	84
	Yard	15
	<b>Total</b>	<b>3,536</b>

**Notes**

<sup>1</sup> In addition to this disturbance in known locations, up to approximately 400 acres of vegetation would be disturbed during exploration activities throughout the Plan area.

Source: NDOW 2014

Avoidance responses could essentially result in a loss of effective habitat beyond the actual footprint of the mine facilities. According to studies conducted by Sawyer et al. (2006) and Sawyer et al. (2009), mule deer on winter ranges avoided otherwise suitable habitats within 2.7 to 3.7 kilometers of gas wells in the Pinedale Anticline in Wyoming. These studies also found no evidence that deer habituate to the presence of oil and gas infrastructure. Thus, although vegetation and other natural features may remain unaltered within areas near human disturbance, deer may make proportionately less use of these areas relative to their availability. A study by Merrill et al. (1994), as cited in Hebblewhite (2008), found that mule deer in southeastern Idaho avoided a phosphate mine during migration.

Based on these studies, it is a reasonable assumption that there would be at least some displacement of mule deer from crucial winter range, winter range, and year-round range in the analysis area over the short-term. This would occur over a wider area than the immediate footprint of the mine and could potentially extend to much or all of the crucial winter range in the



analysis area. Avoidance of the affected crucial winter range could have population-level impacts on mule deer if they are unable to migrate to another site where they can minimize their energetic costs during the winter (Canfield et al. 1999; Lutz et al. 2011). Pronghorn antelope seem to be susceptible to displacement to a lesser degree than mule deer (Hebblewhite 2008; Nielson and Sawyer 2011) and would be less likely to be affected at the population level, because no crucial ranges would be impacted.

The immediate loss of mule deer and pronghorn antelope habitat because of surface disturbance and fencing in and around the Plan area during construction may cause indirect impacts such as influencing these species to displace into adjacent, undisturbed habitats. Pressures to displace into adjacent habitats could increase competition for resources with other wildlife and could affect individuals of a mule deer and/or pronghorn antelope population, including their ability to survive, grow, and reproduce. It could also cause individuals to have to migrate farther in order to find alternate suitable habitat, which could lead to increased stress and energetic loss for these animals and negatively impact their chances of survival (Canfield et al. 1999; Lutz et al. 2011).

The Proposed Action calls for use of existing roads to access and travel through the Plan area. The main access route that would be used leads south from US 50 along existing roads into the Plan area (Route A, Figure 4.8-1). The current rate of approximately two vehicular collisions with deer per year along US 50 between mile markers 1 and 31, in and near the analysis area (NDOT 2014) is likely to increase as a result of the increase in traffic as workers and delivery vehicles travel to and from the mine area (Table 4.8-2). The rate of vehicular collision with pronghorn antelope also is likely to increase, especially along US 50. Although NDOW elk range maps (NDOW 2014) do not overlap the Plan area, the current rate of approximately one vehicular collision per year with an elk along Highway 50 near the analysis area (NDOT 2014) is also likely to increase as a result of increased mine-related traffic. Therefore, transient elk to may be at risk of collision with vehicles associated with the project.

For mule deer specifically, recent NDOW telemetry data suggest that the Rubys migratory herd crosses US 50 near Green Springs Road (Figure 3-9.2); therefore, traffic increases and the potential for collisions near this intersection are a concern during the migration seasons. Mine-related traffic is expected to range from light to heavy during construction based on existing logs for the Pan Mine. A detailed analysis on the potential effects of increased traffic and big game collisions is described in the next section.

Overall, the Proposed Action would impact big game, particularly mule deer and pronghorn antelope, and their habitats in and near the Plan area over both the short-term and long-term. To avoid or minimize these impacts, Midway would implement the Applicant-Committed EPMS outlined in Sections 2.3.16 and 2.3.17.

### **Small Mammals, Predatory Mammals, and Reptiles**

Common small mammals (e.g., cottontail, black-tailed jackrabbit, and ground squirrel), predators (e.g., coyote, fox, and badger), and reptiles (e.g., western fence lizard, western rattlesnake, and gopher snake) are known to occur throughout the analysis area. These species would be impacted by the short-term (for habitats that would be reclaimed and recover quickly) to long-term (for habitats that take many years to recover) loss of habitat and corresponding reductions in local populations. The Proposed Action may also result in the abandonment or loss of eggs/young if construction occurs during the breeding season for any given species.



Smaller, less mobile wildlife could also potentially be killed or injured from work vehicles and equipment during construction activities or from rock or soil displacement during blasting in rocky areas such as along the power line route. There is also potential that some more habituated species, such as coyotes and foxes, could acclimate to the human presence and prey more heavily on small mammals that could be more exposed during ground-disturbing activities. Overall, the Proposed Action would have a short-term impact on common small mammals, predatory mammals, and reptiles from construction activities.

### **Migratory Birds (Except Eagles)**

A variety of resident and migratory bird species have potential to occur in the analysis area. Surface disturbance of approximately 3,500 acres could result in potential impacts to birds from the long-term loss of potentially suitable breeding, roosting, and/or foraging habitat. Within the fenced mine area, where habitat would be lost for the life of the project, birds would likely disperse to surrounding habitat. Note that under the Proposed Action, Midway would install 8-foot high chain link fencing around the ponds and place bird balls (or best available technology) on the pond surfaces to discourage birds from accessing the process ponds within the mine area, as required by the NDOW Industrial Artificial Pond Permit. Birds may continue to use habitat on the outskirts of the mine area; however, some may disperse further because of increased human presence and noise.

Studies have shown that bird populations, particularly breeding bird populations, may be negatively impacted by elevated noise levels (Reijnen and Foppen 2006; Bayne et al. 2008; Ortega 2012). Increased visual stimuli may also affect bird populations at relatively short distances, but the effects of noise appear to be the most critical factor for birds. Traffic and construction noise during construction could affect bird populations in a number of ways.

Acoustic interference from noise could hamper the detection of mating songs, making it more difficult for birds to establish and maintain territories, attract mates, and/or maintain pair bonds (Reijnen and Foppen 1994, Habib et al. 2007, Swaddle and Page 2007 as cited in Reijnen and Foppen 2006; Ortega 2012). This, in turn, may reduce breeding success in noisy habitats. When begging for food, nestlings may also need to call louder to elicit the desired response from their parents (Leonard et al. 2005 as cited in Reijnen and Foppen 2006; Ortega 2012). As a result, the energetic cost of obtaining food may increase and fitness may decrease (Schroeder et al. 2012). High levels of traffic noise may also interfere with the detection of alarm calls such as those signaling the presence of predators, which could lead to higher rates of predation (Parris and Schneider 2008; Ortega 2012).

Birds may avoid areas close to noise sources and noise may effectively extend habitat disturbance beyond the actual facility footprint. The effects of traffic noise on nesting birds may extend more than 300 m on both sides of roadways (Ortega 2012). McClure et al. (2013) found a negative relationship between recorded traffic noise and the abundance of 13 species of migratory birds at a site in Idaho. In a study of songbirds near energy facilities in Alberta, Canada, songbird density was 1.5 times higher near noiseless facilities than near noise-producing facilities (Bayne et al. 2008), indicating that birds avoided the noisy areas. Francis et al. (2009) found fewer species of birds nesting near natural gas wells with noise-producing compressors than at noiseless control sites.

The effects of noise are species-specific, with some species (e.g., black-chinned hummingbirds and house finches) seeming to prefer noisy sites in the Francis et al. (2009) study and others (e.g., mourning dove and black-headed grosbeak) avoiding these sites. Several species (e.g., gray flycatchers, gray vireos, black-throated gray warblers, and spotted towhees) avoided



placing their nests near noise sources in the Francis et al. (2009) study, and the authors concluded that the effects of noise on the breeding bird community were predominately negative. Similar conclusions were reached in a study of the impacts of traffic noise on bird communities in Puerto Rico, where bird species richness and occurrence were lower at sites near highways with noise exceeding 60 dBA than at sites with noise levels below 60 dBA (Herrera-Montes and Aide 2011).

A New Mexico study found that impacts of gas well compressor noise on breeding songbird populations in pinyon-juniper habitat were strongest in areas where noise levels were greater than 50 dBA (LaGory et al. 2001). However, moderate noise levels (40 to 50 dBA) also had some effect on bird densities in this study (LaGory et al. 2001). Noise levels in the Plan area are expected to be similar to those modeled for the Pan Mine Project and greater in intensity than those modeled for exploratory drilling, as detailed further in the sage-grouse section below.

Birds and their nests may be trampled during construction. To minimize impacts to small nesting birds (i.e., non-raptors), a qualified biologist would conduct nesting surveys for migratory birds if disturbance needed to occur between March 15 and July 31. Ground disturbing activities must occur within 7 days of the nest survey. Nest surveys would be conducted prior to and during ground disturbing activities throughout the nesting season so that no more than 7 days elapse between surveys. If nests were found, the “BLM Ely District Recommended Bird Nest Buffer Sizes” document (BLM 2012g) would be followed to determine the appropriate buffer size for avoidance of activity (Appendix 3D).

There are several documented active and inactive raptor nests (prairie falcon and ferruginous hawk nests), as well as those with an unconfirmed status, within and near the Proposed Action analysis area. Land sections in which nests have been found are mapped on Figure 4.9-1. Potential impacts to raptors include the direct, long-term loss of 3,185 acres of potential foraging and nesting habitat (shrubland and woodland). Direct impacts may also include disturbance to nesting raptors due to noise and human activity. Ferruginous hawks in particular are sensitive to human disturbance within 0.5 mile of their nests and are known to preferentially nest away from disturbed areas (Collins and Reynolds 2005). Because raptors are sensitive to human disturbance near their nest sites and may avoid areas near disturbance, the Proposed Action may indirectly result in the short-term loss of an additional 23,644 acres of raptor habitat outside of, but within 0.5 miles of, the project footprint.

Clearance surveys for raptor nests and inventories of existing nests would be conducted prior to and throughout construction during the nesting season (March 15 to July 31) so that no more than 7 days elapse between surveys. To protect active raptor nests and surrounding habitat, construction activities would be restricted during the most sensitive portion of the nesting period (at a minimum, from May 1 through July 15) within 0.5 mile of raptor nest sites unless the nest site has been determined to be inactive for at least the previous five years. If construction must occur within the buffer of an active nest during the nesting season, the BLM may approve initiation of construction activities in the presence of an appropriately trained wildlife monitor. If the BLM determines that the activities could result in takings, the construction activities could be stopped immediately.

The Proposed Action power line and the associated maintenance road would result in the long-term loss of approximately 50 acres of potentially suitable bird habitat. Approximately 53 transmission line poles would be installed in land sections with documented ferruginous hawk nests. All ferruginous hawk nests near the proposed pole locations are either inactive or the status has not been confirmed; none are documented active nests. Should the inactive or unconfirmed nests become active in the future, nesting raptors could attempt to perch or nest on



the poles. This behavior could result in an increased risk of electrocution. Birds are also at risk of colliding with power lines, which can be hard to see, especially during inclement weather.

To minimize these potential impacts, Mount Wheeler Power would use Avian Power Line Interaction Committee (APLIC) avian deterring design measures in PPH or PGH, which could include appropriate spacing between conductors and grounded hardware; use of insulating or cover up materials for perch management; installation of bird flight diverters on the top grounding wire; or perch protection on the top of every pole, which would be created by using the ground/static wire that goes up the pole, bending it to the center of the top of the pole and then upwards another ten to 12 inches.

In summary, impacts to migratory birds within the Plan area are expected to be short-term during construction, except for direct loss of habitat, which would persist beyond the construction phase and be a long-term impact. Implementation of the various Applicant-Committed EPMs described above and in Table 2.3-8 would help to minimize the impacts.

## **Special Status Species**

### ***Greater Sage-grouse***

Impacts to greater sage-grouse from the construction phase of the Proposed Action could include the following:

- Short-term disturbance from noise and human activity
- Long-term habitat loss, alteration, and fragmentation
- Short-term direct mortality from construction equipment
- Short-term direct mortality from vehicle collisions
- Short-term potential for increased predation by ravens

During the construction phase, greater sage-grouse could be subject to short-term disturbance from noise and human activity, which may cause them to temporarily avoid construction areas. Acoustic communication is important in the reproductive behaviors of sage-grouse. There is evidence that the acoustic displays produced by males on leks facilitate reproduction in at least two ways:

- Females use these vocalizations to find leks within the habitat.
- After arrival at a lek, there is evidence that females use male vocalizations (and other aspects of male display) to choose a mate (Upper Green River Basin Sage-Grouse Working Group 2007).

Anthropogenic noise in the greater sage-grouse habitat may mask vocalizations produced by males, interfering both with females' ability to locate leks and to choose mates (Blickley 2013, Blickley et al. 2012a). Increased noise levels near leks that repeatedly disturb birds may lead to males and females abandoning lek sites (Lyon and Anderson 2003; Blickley et al. 2012a).

Under the Proposed Action, project-related traffic on Green Springs Road along the existing main access route is anticipated to have up to 354 additional daily trips during the construction phase (Table 4.8-2). This increased traffic would result in an increased noise level along this route and could impact sage-grouse. To a lesser degree, noise levels could increase and noise impacts could occur along routes B, C, and E during the construction phase, as traffic is anticipated to increase along these routes as well (up to 28 additional daily trips for Route B, up to 14 additional daily trips for Route C and up to 4 additional daily trips for Route E; Table 4.8-2).



Ambient noise levels could increase at lek locations as a result of the noise sources associated with the Proposed Action. The impacts from noise would likely be the greatest if construction took place during the strutting and nesting season. Nine greater sage-grouse leks are located in the analysis area and could potentially be affected by noise from the Proposed Action. These leks include six active leks, two inactive leks, and one lek with unknown activity status. Figure 4.9-1 shows lek locations and Table 4.9-3 shows each lek's proximity to the nearest noise-producing activity within the analysis area.

**Table 4.9-3 Greater Sage-Grouse Lek Proximity to Nearest Noise-Producing Activity Associated with Proposed Action**

Lek Name	Lek Activity Status	Approximate Distance from Project Feature
Monte Cristo W	Inactive	0.01 miles (46 feet) to the south of Proposed Action Main Access Route (CR 1204/BLM 1179)
Seligman Canyon	Active	0.04 miles (194 feet) to the east of Proposed Action Main Access Route (Green Springs Road)
Hoppe Spring W	Inactive	0.35 miles (1,862 feet) to the east of Proposed Action Main Access Route (Green Springs Road)
Belmont Junction SW	Active	0.41 miles (2,179 feet) to the west of Proposed Action Main Access Route (Green Springs Road)
Monte Cristo/Seligman Canyon W	Active	0.47 miles (2,489 feet) to the west of Easy Junior Road/CR 1177
Newark Valley S #2	Active	1.50 miles (7,917 feet) to the east of Easy Junior Road/CR 1177
E Black Point	Active	1.63 miles (8,585 feet) to the west of Proposed Action Power Line Route
Pancake Summit	Unknown	1.77 miles (9,343 feet) to the north of Easy Junior Road/CR 1177
SW Pancake Summit	Active	3.20 miles (16,871 feet) to the north of Proposed Action Power Line Route

Site-specific noise modeling or monitoring has not been conducted for the Gold Rock Mine project. Site-specific baseline noise monitoring for sage-grouse, which will determine ambient noise levels for leks near the project, is planned for spring 2015. For the purposes of this analysis, information from other studies was used to estimate ambient noise levels in the absence of site-specific information. These studies include the following:

- Patricelli et al. 2013: The authors of this study concluded that pre-development ambient noise values ( $L_{90}$ ) for nights and calm mornings (when sage-grouse would be on leks) in sagebrush habitat are in the range of 16 to 20 dBA (based on the authors' review of reports and empirical measurements collected in Wyoming).
- Pan Mine: The ambient  $L_{50}$  values measured at the East Blackpoint Lek and Southwest Pancake Summit Lek as part of noise monitoring for the Pan Mine were 24 dBA and 29 dBA, respectively. Ambient  $L_{90}$  values for these leks were 18 dBA and 19 dBA, respectively (SWCA 2014),
- NDOW provided ambient noise level ( $L_{90}$ ) data for sage-grouse leks near Austin, Nevada, which were gathered to quantify the noise impacts of a proposed geothermal power plant on leks. Background sound levels from the Austin data ranged from 16.4 to 23.0 dBA (SWCA 2012).



All three information sources suggest that ambient noise levels ( $L_{90}$ ) at leks near the Gold Rock Mine may be in the range of 16 to 20 dBA. Site-specific baseline noise monitoring for sage-grouse near the Gold Rock Mine planned for spring 2015 will determine the ambient noise levels for the leks that would be affected by the project.

In the absence of site-specific information, it was assumed that noise impacts to sage-grouse resulting from the Gold Rock Mine project would be similar to those described in the Pan Mine EIS, because the two projects are located in the same region with similar topography and would have similar noise sources (BLM 2013c). It was also assumed that the noise impacts from the Gold Rock project would be of greater intensity than those predicted to occur for exploratory drilling at the site (EDI 2012; SWCA 2012), because full implementation of the project would take longer and use more vehicles and equipment than exploratory drilling.

For the Pan Mine, an increase in noise levels of 10 dBA above ambient was compared against modeled project-related noise levels. The determination of ambient baseline levels and the modeling methodology are described in the Final EIS for the Pan Mine Project (BLM 2013c).

At the Pan Mine, noise modeling did not predict any noise exceedances at the closest lek to the mine access road (the Southwest Pancake Summit lek). This lek is located approximately 4,904 feet from the mine access road. The equipment identified in access road travel would include pickup and semi-trucks (similar equipment would be used at the Gold Rock Mine). Noise monitoring during construction activities at the Pan Mine between March 1 and May 15, 2014 near the Southwest Pancake Summit and East Blackpoint leks indicated that there was a single mine-related noise threshold exceedance at one of the leks (East Blackpoint) for 1 hour. This noise exceedance was 1 dB(A) over the threshold (SWCA 2014).

Several of the leks in the vicinity of the Gold Rock Proposed Action (including the Monte Cristo West, Seligman Canyon, Hoppe Spring West, Belmont Junction Southwest, and Monte Cristo/Seligman Canyon West leks) are much closer to the existing main access route than the leks studied for the Pan Mine. At the Pan Mine, the closest lek to the mine access road was 4,904 feet away, compared to the Gold Rock Mine Project, where seven leks are within 3,000 feet of the existing main access route (Figure 4.9-1). Two leks, the Monte Cristo West Lek and the Seligman Canyon Lek, are within 200 feet of the existing main access route (Figure 4.9-1). It is likely that ambient noise levels would be exceeded at these two leks due to truck traffic and equipment hauling along the main access route, based on their distance from the main access route. The East Black Point lek is located approximately 8,585 feet west of the Proposed Action power line route. Ambient noise levels may be exceeded at the East Black Point lek during construction of the Proposed Action power line due to vegetation clearing activities and power pole installation and maintenance road construction activities, which could include blasting.

Noise modeling was also conducted at leks that had the potential to be impacted by exploratory drilling activities at the Gold Rock project. A noise assessment was conducted within the 2011 Exploration Plan project area to 1) calculate the maximum noise levels that would be generated in any one place by exploratory drilling activities, and 2) identify resulting noise levels at each of the leks along the access roads, given the attenuation that would result due to distance, topography, and typical atmospheric conditions (EDI 2012). The assumptions and methods of this noise assessment are detailed in the Midway Gold Rock Project Final Environmental Assessment (BLM 2012b).

The authors of the study concluded that noise would exceed 35 dBA (the baseline ambient noise level previously used by the BLM) at four leks due to access road maintenance activities during exploration activities. These included the Monte Cristo West, Hoppe Spring West,



Belmont Junction Southwest, and Emigrant leks (Emigrant is no longer considered a valid lek site by NDOW). The study authors also concluded that noise would exceed 35 dBA at three leks due to vehicle traffic on access roads during exploration activities. These included the Belmont Junction Southwest, Monte Cristo West, and Emigrant leks. No exceedances were predicted to result from on-site exploration activity (EDI 2012).

An addendum to the 2011 Exploration Plan EA noise assessment was prepared to address the 2012 Exploration Amendment project area, and the noise assessment for the 2012 Exploration Amendment used an ambient noise level of 19.5 dBA, rather than the 35 dBA level that was used in the previous analysis (SWCA 2012). The addendum analyzed exploratory drilling noise impacts to the four leks located within 3 miles of the nearest 2012 Exploration Amendment project area border.

Sites chosen for the lek noise analysis were located on the 2012 Exploration Amendment project area boundary and represent the loudest possible project noise sources that could cause disturbance to breeding sage-grouse. Assumptions and methods of this noise assessment are described in the 2012 Gold Rock Exploration Project Amendment Preliminary Environmental Assessment (BLM 2012h).

In the noise analysis addendum, project-related noise levels for the maximum equipment use scenario at the project boundary at all four leks were conservatively predicted to exceed the ambient sound level (SWCA 2012). A similar scenario could result under the Proposed Action, because the Proposed Action would include 200 acres of additional exploratory drilling that could take place at or near the Plan boundary. Noise exceedances would likely be greatest to the Monte Cristo West and Hoppe Spring West leks, which are located within 3 miles of the Plan boundary (Table 4.9-4). Other onsite noise sources, such as blasting and equipment use in the mine pit, would be located more than 3 miles away from any leks and would therefore be less likely to impact sage-grouse (Table 4.9-4).

**Table 4.9-4 Greater Sage-Grouse Lek Proximity to Nearest Onsite Noise-Producing Activity Associated with Proposed Action**

Lek Name	Lek Status	Distance in Miles to Plan Boundary*	Distance in Miles to Mine Pit
Monte Cristo W	Inactive	0.9	3.6
Hoppe Spring W	Inactive	1.2	5.1
Monte Cristo/Seligman Canyon W	Active	3.6	6.9
Seligman Canyon	Active	4.1	8.0
Newark Valley South #2	Active	6.2	10.3
Belmont Junction SW	Active	8.5	12.4
E Black Point	Active	9.9	12.2
SW Pancake Summit	Active	10.7	13.5
Pancake Summit	Unknown	14.2	17.7

Note:

\* Conservatively estimated as the potential distance to exploratory drilling noise sources.

If ambient noise threshold exceedances under the Proposed Action took place during the breeding season and were unmitigated, they could ultimately result in a decrease in the number of males and females attending the affected leks (Lyon and Anderson 2003; Blickley et al. 2012a). This effect may persist even after sources of noise have ceased (Blickley et al. 2012a).

The proposed water well is not anticipated to have any noise impacts on sage-grouse. At the proposed well, the well pump would be located at the bottom of the well. The controls and other



equipment on the surface do not make noise. A slight hum might be audible at the surface, close to the wellhead, but this is not anticipated to affect sage-grouse due to the distance from active leks. Even if sage-grouse were able to hear the continuous hum emanating from the well, there is evidence that such continuous noise affects sage-grouse to a lesser degree than intermittent noise (Blickley et al. 2012a).

Construction of the Proposed Action may have additional impacts on greater sage-grouse, including short-term displacement of individual sage-grouse, long-term habitat loss and alteration, direct mortality from construction equipment and vehicle collisions, and increased predation. Construction activities could potentially cause brood-rearing and foraging individuals to temporarily or permanently avoid otherwise suitable habitat in the vicinity of these activities. As a result, displaced sage-grouse may relocate to unaffected but already occupied habitats where population and competition would increase.

Table 4.9-5 presents areas of potential direct and indirect impacts to PPH and PGH as a result of habitat modifications under the action alternatives. These habitat modification activities may fragment suitable sagebrush habitat and could directly and indirectly impact sage-grouse.

Under the Proposed Action, surface disturbance including construction of facility footprints within the Plan area; construction or widening of the Proposed Action county road re-route; installation of the power poles and establishment of the maintenance road for the Proposed Action power line; and establishment of the well pad and maintenance road and installation of the power poles for the proposed second well would result in direct removal of approximately 19 acres of PPH, direct removal of approximately 3,077 acres of PGH, and indirect effects to sage-grouse.

During construction of the Proposed Action, individual sage-grouse could collide with moving vehicles along the access routes, and eggs or chicks could be crushed by construction equipment where construction would occur in sage-grouse habitat (such as along the power line right-of-way). Sage-grouse, especially juveniles, are vulnerable to vehicle collisions (Aldridge and Boyce 2007). In a study in Montana, vehicle collisions were found to be a more frequent cause of mortality than collisions with wires or fences (Wallestad 1975), and in a study in Idaho, vehicle collisions were the cause of mortality for 4 percent of radio-marked females (Hagen 2005). However, vehicle collisions were not found to be a notable cause of mortality in a Eureka County study (Blomberg et al. 2013). Some vehicle collisions during the breeding season could potentially occur from increased greater sage-grouse activity near leks. This could especially be the case along Green Springs Road on the main access route to the project, which would pass through PPH and PGH and is located in close proximity to several leks.

Green Springs Road along the existing main access route is anticipated to have up to 354 additional daily trips during the construction phase (Table 4.8-2). This increased traffic would increase the risk for sage-grouse collision mortality along this route. To a lesser degree, there could also be collision impacts along routes B, C, and E during the construction phase, as traffic is anticipated to increase along these routes as well (up to 28 additional daily trips for Route B, up to 14 additional daily trips for Route C and up to 4 additional daily trips for Route E; Table 4.8-2).



**Table 4.9-5 Greater Sage-Grouse Habitat Impacts Associated with Proposed Action and Alternatives<sup>1</sup>**

	Proposed Action	Northern Power Line Route Alternative	Southern Power Line Route Alternative	Northwest Main Access Route Alternative, Northern Power Line Route	Northwest Main Access Route Alternative, Southern Power Line Route	Modified County Road Re-route Alternative	Western Tailings Facility Alternative
Area of PPH Impacted During Surface Disturbance (acres)	19	8	8	31	31	19	19
Area of PGH Impacted During Surface Disturbance (acres)	3,077	3,071	3,071	3,098	3,101	3,075	2,957
Area of PPH Potentially Impacted By Project-Related Power Lines Outside the Plan Area <sup>2</sup> (acres)	1,374	238	238	238	238	1,374	1,374
Area of PGH Potentially Impacted By Project-Related Power Lines Outside the Plan Area <sup>2</sup> (acres)	1,341	429	260	429	260	1,341	1,341

**Notes:**

- 1 In addition to this disturbance in known locations, up to approximately 400 acres of vegetation would be disturbed during exploration activities throughout the Plan area.
- 2 Sage-grouse tend to avoid habitat within 1,968 feet (600 meters) of power lines (Braun 1998). The presence of project-related power lines could impact sage-grouse or sage-grouse habitat located within 1,968 feet of project-related power lines.

Further, male and female greater sage-grouse may abandon leks if repeatedly disturbed by vehicle traffic on nearby roads (Blickley et al. 2012a; Lyon and Anderson 2003). For example, Blickley et al. (2012a) reported a 73 percent decline in male attendance on leks exposed to traffic noise compared with control leks with no traffic noise. In related studies, the authors found that traffic noise increased stress hormone levels in sage-grouse (Blickley et al. 2012b) and disrupted strutting behaviors of males on leks (Blickley 2013). Therefore, project-related traffic on routes that lead to the Plan area (Figure 4.8-1) has the potential to adversely impact the leks in the analysis area, especially the leks closest to Green Springs Road (the Seligman Canyon Lek and Monte Cristo West Lek).

Roads can also indirectly impact greater sage-grouse and their habitats in a variety of ways that include habitat fragmentation, indirect habitat loss, and a potential decline and/or shift in grouse populations (Aldridge and Boyce 2007; MSGWG 2005). New road construction would be minimal under the Proposed Action, but there would be a segment of new road constructed in PGH as part of the county road re-route, which would impact the marginal sage-grouse habitat in this area.

Common ravens are predators of greater sage-grouse and their eggs and young, and they occur within the project area. Common ravens are known to benefit from the presence of human-built structures such as roads and power lines, which provide nesting foundations (Kristan and Boarman 2007; Backensto 2010, Bui et al. 2010). Human food sources are also an important factor influencing raven nesting success (Kristan and Boarman 2007). In a study of



raven habitat use with respect to sage-grouse occupancy near Pinedale, Wyoming, Bui et al. (2010) determined that ravens use human-built features (e.g., roads) to aid their movement into otherwise undeveloped sagebrush habitat. The authors concluded that increased occupancy of areas by pairs of ravens may negatively affect locally breeding populations of sage-grouse (Bui et al. 2010). Therefore, an additional potential impact to sage-grouse under the Proposed Action is the potential increased predation risk from greater raven occupancy in the project area vicinity.

### ***Railroad Valley Springfish***

As described in Section 4.2, groundwater pumping and associated drawdown under the Proposed Action would not affect water flow in Big Warm Spring, Little Warm Spring or any other occupied Railroad Valley springfish habitat due to the distance of these springs from the water supply well. Therefore, the Proposed Action would have no effect on this species.

### ***Golden Eagle***

Through consultation with the USFWS, a 10-mile buffer was identified as an appropriate survey area to inventory foraging and nesting habitat for golden eagles. NDOW metadata and Ecosynthesis (2013) field surveys indicate there are several active and historic golden eagle nests within a 10-mile buffer of the Plan area (Figure 4.9-1). Impacts to nesting golden eagles would potentially occur if nesting was attempted or occurred during construction activities. Construction could potentially displace eagles from nests and surrounding foraging habitat. Protective measures outlined in USFWS's 2013 Eagle Conservation Plan Guidance, including nest clearance surveys and inventories as described in the previous section, would be employed prior to and during construction activities.

The Interim Golden Eagle Technical Guidance: Inventory and Monitoring Protocols; and Other Recommendations in Support of Golden Eagle Management and Permit Issuance (Pagel et al. 2010) states the following:

“Golden eagle behavior varies among individuals and can be affected by previous experiences. However, some behavioral generalities relative to direct and indirect disturbance include the following:

- agitation behavior (displacement, avoidance, and defense),
- increased vigilance at nest sites,
- change in forage and feeding behavior, and/or
- nest site abandonment.

Of the preceding behaviors, nest site abandonment constitutes a take under the BGEPA, as it is specifically cited in the definition of ‘disturb’. The other behaviors, when considered cumulatively, may be evidence that activities are interfering with normal breeding behavior and are likely to lead to take. Human intrusions near golden eagle nest sites have resulted in the abandonment of the nest; high nestling mortality due to overheating, chilling or desiccation when young are left unattended; premature fledging; and ejection of eggs or young from the nest (Boeker and Ray 1971; Suter and Jones 1981 as cited in the Pan Mine EIS).”

Furthermore, numerous studies have been conducted and published on the interactions between raptors and transmission lines, and raptor electrocution continues to be a concern of state and federal agencies. Transmission lines and structures can also have a beneficial effect



on eagles as they can perch, roost, or nest on poles and prey on wildlife in the area, including sensitive species like greater sage-grouse and pygmy rabbits. Approximately 18 transmission line poles would be located in land sections with documented active golden eagle nests. APLIC design standards would be implemented to discourage eagle roosting, perching, and nesting on transmission lines and poles.

There are several documented active and inactive golden eagle nests, as well as those with an unconfirmed status, within and near the Proposed Action analysis area. Land sections in which golden eagle nests have been found are mapped on Figure 4.9-1. Impacts to nests and associated habitat as well as displacement associated with construction activities would have short-term impacts on golden eagles during the construction phase. Measures designed to reduce impacts to raptors, including golden eagles, are described in Table 2.3-8.

### ***Pygmy Rabbit***

Much of the analysis area contains unsuitable habitat for pygmy rabbits, with the exception of the north-northwestern portion of the Study Area where pygmy rabbit sign was detected during baseline biological surveys (EcoSynthesis and WRC 2013a). The construction of facilities within or near suitable habitat could result in direct sagebrush habitat loss. The Proposed Action would result in the direct long-term loss of 2,247 acres of potentially suitable pygmy rabbit habitat.

Pygmy rabbits could also be adversely impacted over the short term by direct removal of burrows and associated mortality (if occupied burrows were destroyed). Furthermore, increased vehicle and equipment traffic on access roads and project roads could lead to mortality of pygmy rabbits due to collisions during the short-term construction phase. Pygmy rabbit surveys would be performed prior to surface disturbance activities to identify areas of occupied habitat. If occupied habitat were to be encountered, coordination between NDOW and BLM would occur prior to any surface disturbance in that area.

### ***Special Status Bats***

Construction activities, especially blasting, could disturb bat roosts and result in the long-term loss of foraging habitat. The Proposed Action would result in the long-term direct loss of 3,184 acres of potential bat foraging habitat. Bats could also be subject to direct mortality if occupied roosts are destroyed during construction of the project. Because no mine shafts or caves have been identified within the analysis area, the Proposed Action is most likely to affect small numbers of individual bats that may be roosting in trees or rock crevices and is unlikely to have population-level impacts due to the lack of significant roosts or hibernacula identified in the analysis area.

### ***Pale and Dark Kangaroo Mouse***

Potentially suitable habitat for the pale kangaroo mouse and dark kangaroo mouse is present within the area that will be directly and indirectly impacted under the Proposed Action. Construction activities could destroy suitable and occupied habitat as well as displace individual kangaroo mice. There would be 191 acres of direct removal of potentially suitable habitat for the pale kangaroo mouse and 2,247 acres of direct removal of potentially suitable habitat for the dark kangaroo mouse under the Proposed Action. These impacts would be long-term.

Over the short-term, kangaroo mice using the construction area could also be directly crushed and killed by heavy equipment and vehicles on access roads. O'Farrell (1980) captured a maximum of nine individual dark kangaroo mice in a one-month period on a 2.7-ha (6.7 acre) study area in west central Nevada, indicating that these mice occur at fairly low densities



(between one and two individuals per acre) (O'Farrell 1980). This indicates that relatively few individual kangaroo mice may be subject to the short-term direct mortality impacts of the Proposed Action construction phase.

### ***Bighorn Sheep***

Under the Proposed Action, there would not be any direct disturbance to occupied bighorn sheep range. Because bighorn sheep do not regularly use the area, impacts on this species during the construction phase would be short-term and affect relatively few individuals.

### ***Special Status Raptors***

The analysis area contains suitable nesting and foraging habitat for special status raptor species (including western burrowing owls, ferruginous hawks, Swainson's hawks, and peregrine falcons). Noise and human disturbance associated with the construction of the Proposed Action would have a temporary impact on foraging raptors and would temporarily displace them to areas outside the active construction zone.

In addition, construction of the Proposed Action would result in the long-term loss of 3,184 acres of potential raptor foraging habitat (shrubland and woodland), as well as the long-term loss of 746 acres of pinyon-juniper woodland that may provide suitable nesting habitat for raptors such as ferruginous hawks. To put these acreages in context, breeding home ranges for ferruginous hawks in Nevada have been reported as ranging from 1,450 to 1,900 acres (GBBO 2010), so the Proposed Action would directly impact an area roughly equivalent in size to 1 to 2 ferruginous hawk home ranges.

Transmission lines pose an electrocution hazard to birds, particularly raptors, attempting to perch on the poles or lines. Low-flying raptors are also at risk of colliding with power lines, which can be hard to see, especially during inclement weather. To minimize these potential impacts, Midway would implement Applicant-Committed EPMs (Table 2.3-8) and would prepare a Bird and Bat Conservation Strategy for the Gold Rock Mine Project that would be implemented prior to and during construction activities. Within PPH and PGH, Mount Wheeler Power would use APLIC avian deterring design measures. These measures could include appropriate spacing between conductors and grounded hardware; use of insulating or cover up materials for perch management; installation of bird flight diverters on the top grounding wire; or perch protection on the top of every pole, which would be created by using the ground/static wire that goes up the pole, bending it to the center of the top of the pole and then upwards another ten to 12 inches.

Throughout the construction and operations phases of the project, activities taking place in the vicinity of active raptor nests could disturb and displace adults, ultimately leading to nest failure. To protect active raptor nests and surrounding habitat, activities would be restricted from May 1 through July 15 within 0.5 mile of raptor nest sites unless the nest site has been determined to be inactive for at least the previous five years. Clearance surveys for raptor nests and inventories of existing nests would be conducted prior to and throughout construction. If construction must occur within the buffer of an active nest during the nesting season, the BLM may approve initiation of construction activities in the presence of an appropriately trained wildlife monitor. If the BLM determines that the activities could result in takings, the construction activities could be stopped immediately. These measures would help to limit the potential for disturbance to special status raptors that may nest in the analysis area.



Overall, the implementation of design features and Applicant-Committed EPMs described above and in Table 2.3-8 would minimize impacts on special status raptors during the construction phase of the Proposed Action.

### **Special Status Migratory Birds**

Impacts to special status migratory bird species during the construction phase of the Proposed Action would be similar to those described for migratory birds in general, and include the effects of displacement, noise, the potential for direct mortality from equipment, vehicles, and power lines, and long-term habitat loss. Table 4.9-6 summarizes the acres of habitat that would be lost under the Proposed Action for special status migratory bird species. Habitat losses would be long-term. The various Applicant-Committed EPMs (Table 2.3-8) that Midway would implement to protect migratory birds would minimize the impacts of the Proposed Action on these species.

**Table 4.9-6 Special Status Migratory Bird Species Disturbance under the Proposed Action**

<b>Species</b>	<b>Preferred Habitat</b>	<b>Acreage of Long-term Habitat Loss<sup>1</sup></b>
Pinyon Jay	Great Basin Pinyon-Juniper Woodland	746
Loggerhead Shrike	May use any of the habitats in the analysis area	3,184
Black Rosy Finch	May use any of the habitats in the analysis area during the winter	3,184
Sage Thrasher	Great Basin Xeric Mixed Sagebrush Shrubland, Intermountain Basins Big Sagebrush Shrubland, Intermountain Basins Big Sagebrush Steppe	2,247
Brewer's Sparrow	Great Basin Xeric Mixed Sagebrush Shrubland, Intermountain Basins Big Sagebrush Shrubland, Intermountain Basins Big Sagebrush Steppe	2,247

Note:

<sup>1</sup> In addition to this disturbance in known locations, up to approximately 400 acres of vegetation would be disturbed during exploration activities throughout the Plan area.

### **Operations, Maintenance, and Reclamation**

Short-term impacts during operations and maintenance of the project would generally last for the life of the project until final reclamation. In general, impacts to wildlife during these phases of the project could include avoidance of the mine area because of habitat fragmentation, visual stimuli, and human presence (including noise). Wildlife would continue to be at risk of collisions with vehicles associated with operations and maintenance of the project and could be periodically disturbed by road maintenance, transmission line maintenance, and blasting. The following sections describe specific impacts to the different classes of wildlife during the operations, maintenance, and reclamation phases of the project.

If the TSF were to fail, impacts could include short-term or long-term changes to resources. The intensity and extent of the effects would depend on the size of the failure. Short-term or long-term loss or reduction in productivity of wildlife habitat could occur.

### **Big Game**

Anticipated impacts to big game during operations, maintenance, and reclamation of the project include avoidance of the mine area due to human presence (including noise), impacts from habitat fragmentation, and potential injury and mortality from mine-related traffic.



Short-term avoidance of the Plan area and mortality from collisions with vehicles (described above under construction impacts) are expected to carry into operations and continue for the life of the project. Note that some deer and pronghorn antelope may acclimate to the presence of the mine and return to inhabit available habitats in and near the Plan area.

Loss of habitat from the Proposed Action during construction would result in a fragmented landscape during operations. In addition, the surface area between mine components (i.e., inter-facility disturbance) is assumed to be subject to disturbance during operation of the mine. As described previously, approximately 3,500 acres of both short- and long-term land disturbance would result from construction of the Proposed Action. Approximately 31 acres of mule deer year round range, 410 acres of mule deer crucial winter range, and 441 acres of pronghorn year-round range would be permanently lost because the pit would not be reclaimed. Anticipated impacts to mule deer and pronghorn antelope habitat are described above for construction-related impacts.

The fragmented landscape resulting from construction of the Proposed Action could impact movements of big game; particularly the Rubys mule deer herd who use a migration corridor that crosses US 50 in the northern part of the analysis area (near the intersection of Green Springs Road and US 50). Impacts on mule deer movements would likely be greatest during winters with heavy snow accumulation, when deer would move south through and near the analysis area to reach wintering grounds. Mule deer and pronghorn antelope could also alter their use of the analysis area in response to human presence and noise and move into adjacent, undisturbed habitat; such a change in utilization could result in increased competition for limited resources.

There is concern that big game may enter the haul roads of the mine area, which have high (12-foot), steep berms. Under the Proposed Action, Midway would disturb approximately 180 acres for haul roads and secondary roads to connect facilities. Therefore, big game may have difficulty exiting the roads and could be at risk of colliding with mine vehicles. Big game would also be at risk of colliding with vehicles along the main access route and along US 50, where traffic would increase to support mine operations.

Chemicals or solutions associated with gold mines can sometimes be an issue for big game species. However, Midway would comply with all local, state, and federal regulations related to handling potentially toxic substances and limiting their potential for release to the environment. In the event of a spill or release, wildlife that could have entered the mine area could be exposed to hazardous materials. Midway would construct the facilities as zero discharge facilities; install secondary containment features; and implement Applicant-Committed EPMs, the SPCC Plan that would be included in the application for the WPCP, and the Spill Contingency and Emergency Response Plan (Midway 2013a), minimizing the risk of exposure of wildlife to petroleum or hazardous substances. Furthermore, Midway would install 8-foot chain-link fencing around the process ponds, thereby eliminating access to these ponds and minimizing the potential for big game to ingest cyanide that will be present in the mine's process ponds.

Rock mined through the project may contain acid or metals that could be released into the environment and exposed to wildlife after precipitation events. However, these impacts would be unlikely as the WRDAs would be capped with approximately 10 feet of high-carbonate material using waste rock set aside during mining, with an overlying vegetated plant growth media cover to minimize the long-term potential for acid generation and metals leaching.



### **Small Mammals, Predatory Mammals, and Reptiles**

Common small mammals (i.e., cottontail, jackrabbit, and ground squirrel), common predators (i.e., coyote, fox, and badger), and common reptiles (i.e., western fence lizard and sagebrush lizard) known to occur throughout the project area could be displaced into adjacent undisturbed habitat during operations, maintenance, and reclamation activities. However, some smaller and less mobile wildlife species could potentially be killed or injured during these activities. Impacts to these species from operations, maintenance and reclamation activities would be short-term.

### **Migratory Birds (Except Eagles)**

Many of the impacts to birds described for construction would carry over into the operations phase of the project. Migratory birds would be subject to habitat fragmentation, human presence and noise, collision with vehicles and infrastructure, and electrocution from transmission lines. In addition, birds may avoid the mine area and displace into neighboring habitats to nest, forage, and seek shelter. Impacts to migratory birds are expected to be short-term.

In addition to impacts described for construction, birds may be subject to ingestion of toxins and metals. Migratory birds may be exposed to cyanide, which would be present in diluted concentrations in the process ponds. To limit the exposure risk to migratory birds, Midway would construct 8-foot fencing and install bird balls or other best available technology to discourage birds from accessing the ponds as required by the NDOW Industrial Artificial Pond Permit. In addition, petroleum, oil, or lubricants used for vehicles on access roads and operations equipment could leak/spill and travel into migratory bird habitats, particularly during precipitous events. Proper measures would be taken to minimize the potential for spills and leaks of toxic materials into the environment.

The majority of disturbed habitats in the analysis area would be reclaimed at or before the close of mining operations, but would be unavailable to avian species and other wildlife until final stabilization. Reclamation would be designed to establish a productive post-mining environment that would support wildlife, including migratory birds.

### **Special Status Species**

#### ***Greater Sage-grouse***

Impacts to greater sage-grouse from the operations, maintenance, and reclamation phases of the Proposed Action could include the following:

- Short-term disturbance from noise and human activity
- Short-term direct mortality from vehicle collisions
- Short-term direct mortality from power line and fence collisions
- Short-term potential for increased predation by raptors and ravens perching on power lines
- Long-term potential for spread of noxious weeds

The impacts to greater sage-grouse from operations, maintenance, and reclamation are expected to be similar in intensity to the impacts described above under construction. Active greater sage-grouse leks could potentially be impacted by human-made noise sources that would continue into the operations, maintenance, and reclamation phases of the Proposed Action. Other human activities could have adverse effects on greater sage-grouse during the operations, maintenance, and reclamation phases of the project, for example, males and females may abandon leks if repeatedly disturbed by raptors perching on power lines near leks



(Ellis 1984), by vehicle traffic on nearby roads (Blickley et al. 2012a; Lyon and Anderson 2003), or by noise and human activity during the breeding season (Braun et al. 2002; Holloran 2005).

Higher sage-grouse mortality rates from vehicle collisions could occur along Green Springs Road, especially during the breeding season when greater sage-grouse activity near leks increases (Nevada Governor's Sage-grouse Conservation Team 2010). The existing main access route to the Plan area (Route A, Figure 4.8-1; Figure 4.9-1) is anticipated to have up to 292 additional daily trips during the operations phase of the project (Table 4.8-2), which would increase the collision risk for sage-grouse over the short-term. Vehicle collisions could also occur along other routes that lead to the Plan area (Routes B, C, D, and E). During the operations phase, there are anticipated to be up to 18, eight, six, and four additional daily trips on Routes B, C, D, and E, respectively (Table 4.8-2).

Overhead power lines may have direct and indirect effects on sage-grouse. The wires and structures provide hunting perch sites for predators such as raptors and ravens and may be obstacles for sage-grouse during evening flights (Nevada Governor's Sage-grouse Conservation Team 2010). Several studies suggest that sage-grouse and related species instinctively avoid habitat when power lines or other vertical structures are visible from that habitat in order to avoid predation (Schroeder 2010). One study found that sage-grouse tend to avoid habitat located within 600 meters (1,968 feet) of power lines (Braun 1998). By avoiding use of the habitat, the birds lose the benefits of that habitat. Thus, the effective habitat loss and fragmentation created by power lines may extend to an area much greater than the actual power line corridor.

Based on Braun's 1998 findings, the analysis areas for sage-grouse included 600-meter (1,968-foot) buffers on project-related power lines to assess direct impacts to sage-grouse and sage-grouse habitat. Under the Proposed Action, project-related power lines outside of the Plan area could affect approximately 1,374 acres of PPH and approximately 1,341 acres of PGH, representing a short-term direct and indirect habitat loss for sage-grouse (Table 4.9-5).

Fences also pose a collision risk to sage-grouse. For example, one study in Idaho found 56 sage-grouse that had been killed by colliding with fences. Most of these were male sage-grouse that collided with fences within 500 meters (1,640 feet) of a lek during the strutting season (Stevens et al. 2012). Under the Proposed Action, there would be no fences installed in PPH and 12 miles of fence installed in PGH. Although no fences would be installed within 500 meters of a known lek, the new fences would still pose a minor to moderate collision risk for sage-grouse. Midway would minimize this risk by marking fences within PGH according to NRCS guidelines to increase their visibility to sage-grouse.

Noxious weed and invasive plant introductions could indirectly impact sage-grouse over the long-term through a reduction in habitat quality and/or changes in trophic structure. The potential for invasive species to spread would be highest in newly disturbed areas. Once established, invasive plants could displace native plant species and adversely affect the wildlife and insects dependent on that native vegetation, including sage-grouse (Evangelista et al. 2011; Davies et al. 2011; DiTomaso 2000). Desirable forage species may be replaced with undesirable species. Noxious weeds and invasive plants could also indirectly affect ecosystem function by changing species composition and changing the physical environment by altering burn cycles and erosion rates (Evangelista et al. 2011; Davies et al. 2011; DiTomaso 2000).

Overall, impacts to greater sage-grouse under the Proposed Action would be both short-term and long-term. Human presence and habitat disturbance (including the addition of fences and



power lines on the landscape) taking place under the Proposed Action may have an adverse impact on the local sage-grouse population.

### ***Railroad Valley Springfish***

As described in Section 4.2, groundwater pumping and associated drawdown under the Proposed Action would not impact water flow in Big Warm Spring, Little Warm Spring or any other occupied Railroad Valley springfish habitat due to the distance of these springs from the water supply well. Therefore, the Proposed Action would have no effect on this species.

### ***Golden Eagle***

Noise and human disturbance associated with operations, maintenance, and reclamation of the Proposed Action would impact foraging and nesting golden eagles and possibly displace them to adjacent habitats and limit the potential for a return to a historic nest site in the vicinity of the mine area. These impacts would be short-term, lasting throughout the life of the project until reclamation.

Reclamation of disturbed areas resulting from activities associated with the Proposed Action would be completed in accordance with BLM and NDEP regulations.

### ***Pygmy Rabbit***

During the operations and maintenance phase of the Proposed Action, pygmy rabbits could continue to be potentially affected by vehicle collisions along the main access route. Up to 292 vehicle trips per day are anticipated during the operations of the Proposed Action (Table 4.8-2), which would pose a threat to pygmy rabbits and other wildlife that may cross roads. A potential indirect effect of the Proposed Action on pygmy rabbits is the increase in predation risk associated with the newly installed transmission line, which may provide perches and nesting sites for raptors. These impacts would be short-term, as the transmission line would be removed during the reclamation phase of the project.

### ***Special Status Bats***

Several special status bat species have suitable foraging and roosting habitat throughout the analysis area, though no known hibernacula are present. The primary impacts to bats during the operations, maintenance, and reclamation phases would include the potential for the ongoing displacement of bats due to human activity (e.g., due to light and noise caused by nighttime mining activities) and the potential for mortality of bats due to cyanide poisoning at the leach ponds.

Water is crucial to bats inhabiting desert and semi-desert ecosystems and bats may travel many miles to visit reliable sources of drinking water (Taylor 2007). Bats are also attracted to water sources because they attract and concentrate their insect prey. The processing ponds that would be constructed under the Proposed Action would provide a new source of water on the landscape that would potentially attract bats as a drinking water source and as foraging habitat.

There have been documented cases of mortalities of bats in process ponds containing cyanide at gold mines (Eisler and Wiemeyer 2004). For example, between 1980 and 1989, 175 bats were found dead at cyanide extraction gold mine mill tailings and processing ponds in California, Nevada, and Arizona, and at a mine in California, a nearby population of Townsend's big-eared bats may have been extirpated as a result of cyanide exposure (Eisler and Wiemeyer 2004). Midway would install bird balls or best available technology on the process pond surfaces to deter wildlife use.



At the Gold Rock Project, Midway would cover the processing ponds with bird balls or other best available technology to discourage birds from accessing the ponds. The effectiveness of such measures to exclude bats is unknown, and if they are ineffective for bat exclusion, the Proposed Action may result in the cyanide poisoning and/or drowning of bats that drink from the processing ponds or fall into the process ponds while foraging. This potential impact would be short-term, as the ponds would be closed and reclaimed once mining is complete.

### ***Pale and Dark Kangaroo Mouse***

During the operations, maintenance, and reclamation phases of the Proposed Action, pale and dark kangaroo mice may be at risk of being killed by collisions with vehicles and maintenance equipment in suitable habitat. These impacts would be short-term, as they would cease after reclamation was completed. Small areas of potentially suitable habitat for these species may also be removed or altered during operations, maintenance, and reclamation, for example, by ongoing weed control activities. A potential indirect effect of the Proposed Action on the pale and dark kangaroo mouse is the increase in predation risk associated with the newly installed transmission line, which may provide perches and nesting sites for raptors and ravens. These impacts would be short-term, as the transmission line would be removed during the reclamation phase of the project.

### ***Bighorn Sheep***

No occupied bighorn sheep range would be affected by operations, maintenance, or reclamation activities under the Proposed Action. Individual bighorn sheep may avoid the area of active mining if present in the vicinity, but these impacts would be short-term and affect few individuals in marginal habitat.

### ***Special Status Raptors***

During the operations, maintenance, and reclamation phases of the Proposed Action, special status raptor species may be affected by ongoing human presence and may avoid some areas of formerly suitable habitat. Installation of the transmission line would provide a new nesting and perching structure on the landscape, but it would also potentially pose a collision risk. Transmission lines pose an electrocution hazard to birds, particularly raptors, attempting to perch on the poles or lines. Low-flying raptors are also at risk of colliding with power lines, which can be hard to see, especially during inclement weather.

To minimize these potential impacts, Mount Wheeler Power would use APLIC avian deterring design measures within PPH and PGH which could include appropriate spacing between conductors and grounded hardware; use of insulating or cover up materials for perch management; installation of bird flight diverters on the top grounding wire; or perch protection on the top of every pole, which would be created by using the ground/static wire that goes up the pole, bending it to the center of the top of the pole and then upwards another ten to 12 inches.

Ongoing operations, maintenance, and reclamation activities taking place near active raptor nests could disturb and displace adults, ultimately leading to nest failure. To protect active raptor nests and surrounding habitat, activities would be restricted from May 1 through July 15 within 0.5 miles of raptor nest sites unless the nest site has been determined to be inactive for at least the previous five years. These measures would help to limit the potential for disturbance to special status raptors that may nest in the Plan area. Overall, the implementation of design features and Applicant-Committed EPMs (Table 2.3-8) to minimize impacts on migratory birds, and raptors in particular, would minimize the short-term impacts of



the operations, maintenance, and reclamation phases of the Proposed Action on special status raptors.

### ***Special Status Migratory Birds***

Impacts to special status migratory bird species during the operations, maintenance, and reclamation phases of the Proposed Action would be similar to those described for migratory birds in general, and include the effects of displacement, noise, the potential for direct mortality from equipment, vehicles, and power lines. The various Applicant-Committed EPMs (Table 2.3-8) that Midway would implement to protect migratory birds would help to minimize the impacts of the Proposed Action on these species.

### ***4.9.4 Northern Power Line Route Alternative***

The Northern Power Line Route Alternative would result in similar types, intensity and duration of impacts to wildlife resources as described under the Proposed Action, except that this alternative would involve a power line corridor that is 7.1 miles shorter than the Proposed Action power line corridor. This shorter corridor would disturb slightly less mule deer and pronghorn antelope year-round range and less greater sage-grouse PPH and PGH. Details on impacts to all wildlife species categories analyzed under the Proposed Action are provided in the following sections for the Northern Power Line Route Alternative. Figure 4.9-2 shows the Northern Power Line Route Alternative in relation to wildlife resources.

## **Construction**

### **Big Game**

Construction-related impacts to big game, particularly mule deer and pronghorn antelope, would be similar to those outlined under the Proposed Action, with the exception of impacting approximately 21 fewer acres of year-round mule deer range and 16 fewer acres of year-round pronghorn antelope range. Surface disturbance in mule deer crucial winter range would be the same as that described for the Proposed Action (Table 4.9-1). Impacts to big game would be short-term during construction with the exception of direct habitat losses, which would be long-term.

### **Small Mammals, Predatory Mammals, and Reptiles**

Construction-related impacts to small mammals, predatory mammals, and reptiles would be short-term and similar to those outlined under the Proposed Action.

### **Migratory Birds (Except Eagles)**

Construction-related impacts to migratory birds (except eagles), would be similar to those outlined under the Proposed Action, and the same amount of disturbance to nests is anticipated. Overall, impacts to migratory birds would be short-term during construction except for direct habitat losses, which would be long-term.

## **Special Status Species**

### ***Greater Sage-grouse***

Compared with the Proposed Action, there would be less direct and indirect disturbance to greater sage-grouse habitat under this alternative. Leks would be the same distance from the components of the Northern Power Line Route Alternative as described for the Proposed Action in Table 4.9-3 and Table 4.9-4; therefore, noise impacts on leks would be the same as



described for the Proposed Action. Other impacts to greater sage-grouse under this alternative, including anticipated road use, would be similar to those under the Proposed Action.

Surface disturbance would result in long-term impacts to 8 acres of PPH and 3,071 acres of PGH, compared with 19 and 3,077 acres, respectively, under the Proposed Action. For this alternative, project-related power lines outside the Plan area could impact 238 acres of PPH and 429 acres of PGH, compared to 1,374 acres of PPH and 1,341 acres of PGH under the Proposed Action. (Table 4.9-5).

### ***Railroad Valley Springfish***

As described above for the Proposed Action, this alternative would have no effect on the Railroad Valley springfish.

### ***Eagles***

Short-term construction-related impacts to eagles would be similar to those outlined under the Proposed Action, and the same amount of disturbance to nests is anticipated.

### ***Pygmy Rabbit***

Construction impacts to the pygmy rabbit under this alternative would be similar to those under the Proposed Action except that the acreage of direct habitat disturbance would be slightly lower. The Northern Power Line Route Alternative would result in the long-term removal of 2,231 acres of big sagebrush habitat, compared to 2,247 acres under the Proposed Action..

### ***Special Status Bats***

Construction impacts to special status bat species under this alternative would be similar to those under the Proposed Action. The Northern Power Line Route Alternative would result in the long-term removal of 3,151 acres of shrubland and woodland habitat that may be used by bats for foraging and roosting, compared with 3,184 acres under the Proposed Action.

### ***Pale and Dark Kangaroo Mouse***

Construction impacts to the pale kangaroo mouse and dark kangaroo mouse under this alternative would be similar to those under the Proposed Action. The Northern Power Line Route Alternative would result in the long-term removal of 190 acres of preferred habitat for the pale kangaroo mouse and 2,231 acres of preferred habitat for the dark kangaroo mouse, compared to 191 and 2,247 acres under the Proposed Action, respectively.

### ***Bighorn Sheep***

As with the Proposed Action, the Northern Power Line Route Alternative would not impact any bighorn sheep range and would have short-term impacts on relatively few individuals.



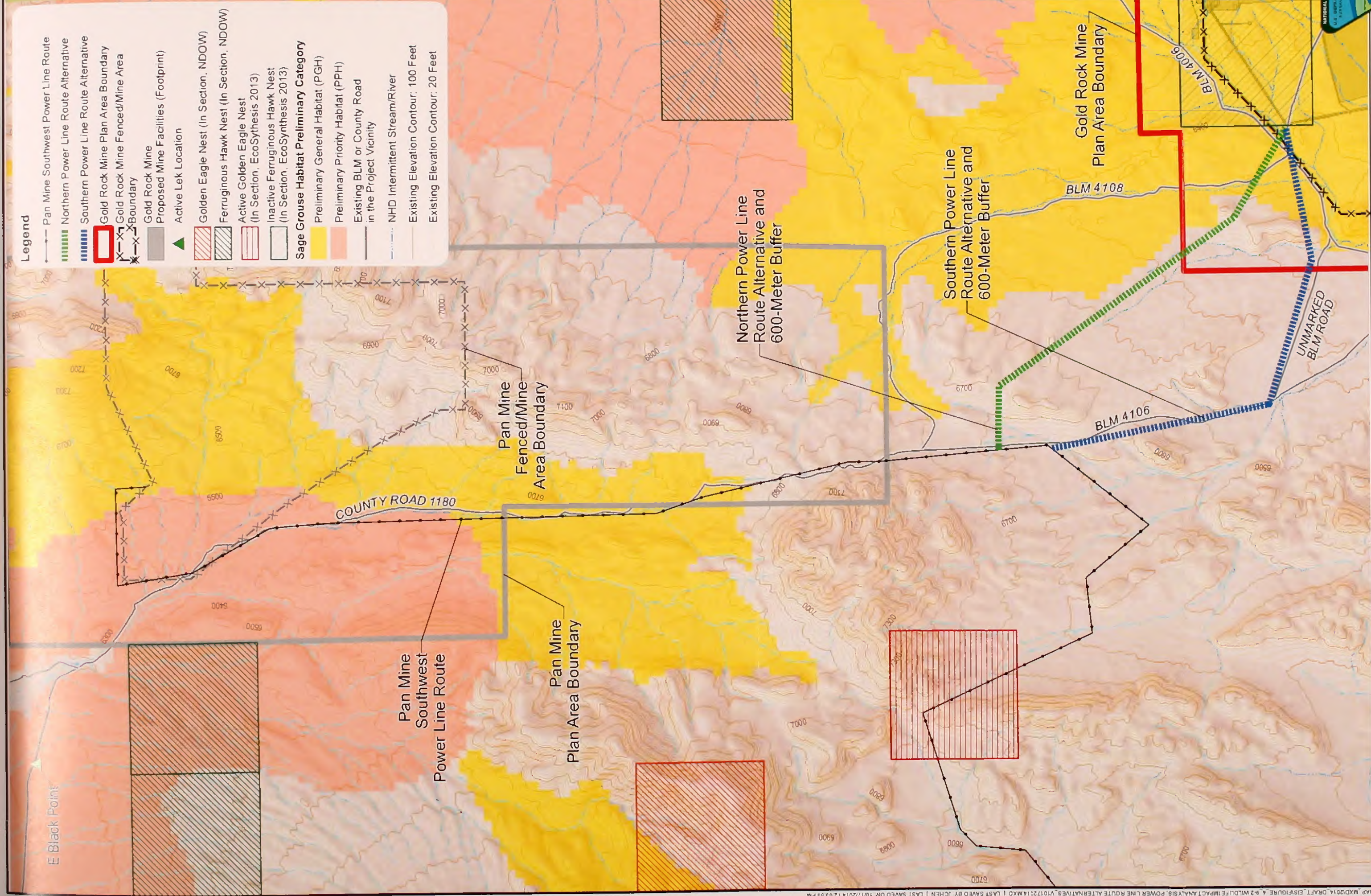
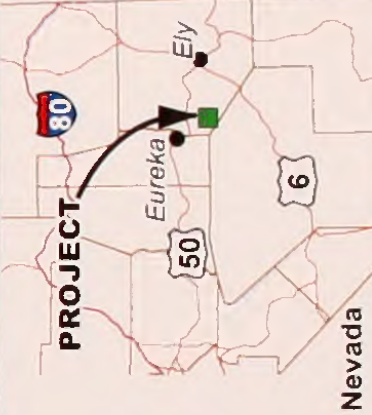


FIGURE 4.9-2  
WILDLIFE IMPACT ANALYSIS,  
POWER LINE ROUTE ALTERNATIVES  
MIDWAY GOLD US INC.  
GOLD ROCK MINE PROJECT

MAPPED DATE: 10/17/2014



U.S. BUREAU OF LAND MANAGEMENT  
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Basemap Source: ESRI World Shaded Relief Map Service







### ***Special Status Raptors***

Construction impacts to special status raptor species under this alternative would be similar to those under the Proposed Action. The Northern Power Line Route alternative would result in the long-term removal of 3,151 acres of shrubland and woodlands habitats that may be used by raptors for nesting and foraging, compared with 3,184 acres under the Proposed Action.

### ***Special Status Migratory Birds***

Construction impacts to special status migratory birds under this alternative would be similar to those under the Proposed Action. The Northern Power Line Route alternative would result in the long-term removal of 3,151 acres of shrubland and woodland habitats that may be used by special status migratory birds for nesting and foraging, compared with 3,184 acres under the Proposed Action. This would include 730 acres of impact to pinyon-juniper woodland habitat (compared with 746 acres under the Proposed Action) and 2,231 acres of impact to big sagebrush habitat (compared with 2,247 acres under the Proposed Action).

## **Operations, Maintenance, and Reclamation**

### **Big Game**

Short- and long-term operations, maintenance, and reclamation impacts to big game, particularly mule deer and pronghorn antelope, would be similar to those outlined under the Proposed Action. The Northern Power Line Route Alternative would result in fewer impacts to year-round mule deer and pronghorn antelope range, as described above for construction-related impacts.

### **Small Mammals, Predatory Mammals, and Reptiles**

Short- and long-term impacts to small mammals, predatory mammals, and reptiles would be similar to those outlined under the Proposed Action.

### **Migratory Birds (Except Eagles)**

Impacts to migratory birds (except eagles) would be similar to those outlined under the Proposed Action.

### **Special Status Species**

#### ***Greater Sage-grouse***

Due to the reduced length of the power line in greater sage-grouse habitat under this alternative, the short-term effects of power line collision and raptor predation risk would be reduced under this alternative relative to the Proposed Action. Other impacts to greater sage-grouse, including anticipated road use, during the operations, maintenance, and reclamation phases of this alternative would be similar to those described above under the Proposed Action.

#### ***Railroad Valley Springfish***

As described above for the Proposed Action, this alternative would have no effect on the Railroad Valley springfish.

#### ***Eagles***

Short- and long-term impacts to eagles would be similar to those outlined under the Proposed Action.



***Pygmy Rabbit***

Due to the reduced length of the power line under this alternative, the short-term potential for increased predation risk from raptor perching may be lower under this alternative than under the Proposed Action. Other operations, maintenance, and reclamation impacts would be similar to those described above for the Proposed Action.

***Special Status Bats***

Short- and long-term operations, maintenance, and reclamation impacts to special status bat species under this alternative would be similar to those described for the Proposed Action.

***Pale and Dark Kangaroo Mouse***

Due to the reduced length of the power line under this alternative, the short-term potential for increased predation risk from raptor perching may be lower under this alternative than under the Proposed Action. Other operations, maintenance, and reclamation impacts would be similar to those described above for the Proposed Action.

***Bighorn Sheep***

As with the Proposed Action, the Northern Power Line Route Alternative would not impact any bighorn sheep range.

***Special Status Raptors***

Due to the reduced length of the power line under this alternative, the short-term potential for collisions and opportunities for raptor perching and nesting may be lower under this alternative than under the Proposed Action. Other operations, maintenance, and reclamation impacts would be similar to those described above for the Proposed Action.

***Special Status Migratory Birds***

Due to the reduced length of the power line under this alternative, the short-term potential for collisions may be lower under this alternative than under the Proposed Action. Other operations, maintenance, and reclamation impacts would be similar to those described above for the Proposed Action.

***4.9.5 Southern Power Line Route Alternative***

The Southern Power Line Route Alternative would result in similar types, intensity and duration of impacts to wildlife resources as described under the Proposed Action, except that this alternative would involve a power line corridor that is 6.7 miles shorter than the Proposed Action power line corridor. This shorter corridor would disturb slightly less mule deer and pronghorn antelope year-round range and less greater sage-grouse PPH and PGH. Details on impacts to all wildlife species categories analyzed under the Proposed Action are provided in the following sections for the Southern Power Line Route Alternative. Figure 4.9-2 shows the Southern Power Line Route Alternative in relation to wildlife resources.

**Construction*****Big Game***

Short- and long-term construction-related impacts to big game, particularly mule deer and pronghorn antelope, would be similar to those outlined under the Proposed Action, with the



exception of impacting approximately 22 fewer acres of year-round mule deer range and 17 fewer acres of year-round pronghorn antelope range. Disturbance acres to mule deer crucial winter range would be the same as those described for the Proposed Action.

### **Small Mammals, Predatory Mammals, and Reptiles**

Short-term construction-related impacts to small mammals, predatory mammals, and reptiles would be similar to those outlined under the Proposed Action.

### **Migratory Birds (Except Eagles)**

Construction-related impacts to migratory birds (except eagles), would be similar to those outlined under the Proposed Action, and the same acres of impacts to nests are anticipated.

### **Special Status Species**

#### ***Greater sage-grouse***

Less direct and indirect disturbance to greater sage-grouse habitat would occur under this alternative compared with the Proposed Action. Leks would be the same distance from the components of the Southern Power Line Route Alternative as described for the Proposed Action in Table 4.9-3 and Table 4.9-4; therefore, noise impacts on leks would be the same as described for the Proposed Action. Other short- and long-term impacts on greater sage-grouse, including anticipated road use, would be similar to those under the Proposed Action.

Surface disturbance would impact 3,071 acres of PGH and 8 acres of PPH, compared with 3,077 acres and 19 acres under the Proposed Action, respectively. For this alternative, project-related power lines outside the Plan area could impact approximately 238 acres of PPH and 260 acres of PGH, compared to approximately 1,374 acres of PPH and 1,341 acres of PGH under the Proposed Action.

#### ***Railroad Valley Springfish***

As described above for the Proposed Action, this alternative would have no effect on the Railroad Valley springfish.

#### ***Eagles***

Construction-related impacts to eagles would be similar to those outlined under the Proposed Action, and similar indirect impacts including potential displacement are anticipated.

#### ***Pygmy Rabbit***

Construction impacts to the pygmy rabbit under this alternative would be similar to those under the Proposed Action. The Southern Power Line Route Alternative would result in the long-term removal of 2,233 acres of big sagebrush habitat, compared to 2,247 acres under the Proposed Action.

#### ***Special Status Bats***

Construction impacts to special status bat species under this alternative would be similar to those under the Proposed Action. The Southern Power Line Route Alternative would result in the long-term removal of 3,150 acres of shrubland and woodland habitat that may be used by bats for foraging and roosting, compared with 3,184 acres under the Proposed Action.



***Pale and Dark Kangaroo Mouse***

Construction impacts to the pale kangaroo mouse and dark kangaroo mouse under this alternative would be similar to those under the Proposed Action. The Southern Power Line Route Alternative would result in the long-term removal of 191 acres of preferred habitat for the pale kangaroo mouse and 2,233 acres of preferred habitat for the dark kangaroo mouse, compared to 191 and 2,247 acres under the Proposed Action, respectively.

***Bighorn Sheep***

As with the Proposed Action, the Southern Power Line Route Alternative would not impact any bighorn sheep range.

***Special Status Raptors***

Construction impacts to special status raptor species under this alternative would be similar to those under the Proposed Action. The Southern Power Line Route alternative would result in the long-term removal of 3,150 acres of shrubland and woodland habitats that may be used by raptors for nesting and foraging, compared with 3,184 acres under the Proposed Action.

***Special Status Migratory Birds***

Construction impacts to special status migratory bird species under this alternative would be similar to those under the Proposed Action. The Southern Power Line Route alternative would result in the long-term removal of 3,150 acres of shrubland and woodland habitats that may be used by special status migratory birds for nesting and foraging, compared with 3,184 acres under the Proposed Action. This would include 726 acres of impact to pinyon-juniper woodland habitat (compared with 746 acres under the Proposed Action) and 2,233 acres of impact to big sagebrush habitat (compared with 2,247 acres under the Proposed Action).

**Operations, Maintenance, and Reclamation*****Big Game***

Short- and long-term operations, maintenance, and reclamation impacts to big game, particularly mule deer and pronghorn antelope, would be similar as those outlined under the Proposed Action. The Southern Power Line Route Alternative would result in fewer impacts to year-long mule deer and pronghorn antelope range, as described above for construction-related impacts.

***Small Mammals, Predatory Mammals, and Reptiles***

Impacts to small mammals, predatory mammals, and reptiles would be similar to those outlined under the Proposed Action.

***Migratory Birds (Except Eagles)***

Impacts to migratory birds (except eagles) would be similar to those outlined under the Proposed Action.

***Special Status Species******Greater Sage-grouse***

Due to the reduced length of the power line in greater sage-grouse habitat under this alternative, the long-term effects of power line collision and raptor predation risk would be



reduced under this alternative relative to the Proposed Action. Other short- and long-term impacts to greater sage-grouse, including anticipated road use, during the operations, maintenance, and reclamation phases of this alternative would be the same as those described above under the Proposed Action.

#### ***Railroad Valley Springfish***

As described above for the Proposed Action, this alternative would have no effect on the Railroad Valley springfish.

#### ***Eagles***

Impacts to eagles would be similar to those outlined under the Proposed Action.

#### ***Pygmy Rabbit***

Due to the reduced length of the power line under this alternative, the short-term potential for increased predation risk from raptor perching may be lower under this alternative than under the Proposed Action. Other operations, maintenance, and reclamation impacts would be similar to those described above for the Proposed Action.

#### ***Special Status Bats***

Short- and long-term operations, maintenance, and reclamation impacts to special status bat species under this alternative would be similar to those described for the Proposed Action.

#### ***Pale and Dark Kangaroo Mouse***

Due to the reduced length of the power line under this alternative, the short-term potential for increased predation risk from raptor perching may be lower under this alternative than under the Proposed Action. Other operations, maintenance, and reclamation impacts would be similar to those described above for the Proposed Action.

#### ***Bighorn Sheep***

As with the Proposed Action, the Southern Power Line Route Alternative would not impact any bighorn sheep range.

#### ***Special Status Raptors***

Due to the reduced length of the power line under this alternative, the short-term potential for collisions and opportunities for raptor perching and nesting may be lower under this alternative than under the Proposed Action. Other operations, maintenance, and reclamation impacts would be similar to those described above for the Proposed Action.

#### ***Special Status Migratory Birds***

Due to the reduced length of the power line under this alternative, the short-term potential for collisions may be lower under this alternative than under the Proposed Action. Other operations, maintenance, and reclamation impacts would be similar to those described above for the Proposed Action.

### ***4.9.6 Northwest Main Access Route Alternative, Northern Power Line Route***

Impacts to wildlife from implementation of the Northwest Main Access Route, Northern Power Line Route would be similar to impacts described for the Proposed Action, except there would



be more acres of disturbance to mule deer and pronghorn antelope year-round range, potentially fewer wildlife collisions along Green Springs Road, and slightly more disturbance to greater sage-grouse PPH/PGH and leks. Details on impacts to all wildlife species categories analyzed under the Proposed Action are provided in the following sections for the Northwest Main Access Route Alternative, Northern Power Line Route. Figure 4.9-3 shows the Northwest Main Access Route Alternative, Northern Power Line Route in relation to wildlife resources.

## **Construction**

### **Big Game**

Construction-related impacts to big game, particularly mule deer and pronghorn antelope, would be similar to those outlined under the Proposed Action, with the exception of impacting approximately 32 more acres of year-round mule deer range. Approximately 57 more acres of impact to year-round pronghorn antelope range would occur. Disturbance acres to mule deer crucial winter range would be similar to those described for the Proposed Action.

The Northwest Main Access Route would likely contribute to fewer big game collisions than the Proposed Action. This is because the Northwest Main Access Route, Northern Power Line Route would be located further from the Rubys mule deer migration corridor (which follows Green Springs Road south from US 50) compared to the Proposed Action and workers may prefer to stay in Eureka and approach the site from the west.

However, although Midway could direct commercial traffic associated with the mine to use the Northwest Main Access Route Alternative, Northern Power Line Route, Green Springs Road would still remain open to vehicular traffic. Therefore, temporary and short-term impacts due to collisions and traffic noise on Green Springs Road would still occur under the Northwest Main Access Route Alternative, though at a reduced level relative to the Proposed Action. Traffic on Green Springs Road would include up to 28 and 16 daily vehicle trips for construction and operations, respectively, compared with up to 354 and 292 daily vehicle trips under the Proposed Action.

### **Small Mammals, Predatory Mammals, and Reptiles**

Short-term construction-related impacts to small mammals, predatory mammals, and reptiles would be similar to those outlined under the Proposed Action.

### **Migratory Birds (Except Eagles)**

Construction-related impacts to migratory birds (except eagles), would be similar to those outlined under the Proposed Action, and the same acres of disturbance to nests are anticipated.

### **Special Status Species**

#### ***Greater Sage-grouse***

Under this alternative, Midway would direct commercial traffic associated with the Gold Rock Mine to use the Northwest Main Access Route Alternative, Northern Power Line Route. Leks would be the same distance from the components of the Northwest Main Access Route Alternative, Northern Power Line Route as described for the Proposed Action in Table 4.9-3 and Table 4.9-4. However, traffic patterns would vary from those under the Proposed Action, so the magnitude of impacts on individual leks may be different.





Basemap Source: ESRI World Shaded Relief Map Service



MIDWAY GOLD US INC.  
GOLD ROCK MINE PROJECT







Although Midway could direct commercial traffic associated with the Gold Rock Mine to use the Northwest Main Access Route Alternative, Northern Power Line Route, Green Springs Road and the rest of the existing main access route would remain open to vehicular traffic. Under this alternative, up to 28 additional daily trips are anticipated on Green Springs Road and the rest of the existing main access route, compared to up to 354 additional daily trips under the Proposed Action. This lower amount of traffic compared to the Proposed Action would likely result in fewer noise impacts on the Belmont Junction Southwest, Seligman Canyon, Hoppe Spring West, and Monte Cristo West leks.

However, the Northwest Main Access Route is anticipated to have up to up to 354 additional daily trips during the construction phase and 292 additional daily trips during the operations phase. Noise from traffic using the Northwest Main Access Route Alternative, Northern Power Line Route Alternative could have temporary and long-term effects and comparatively greater noise impacts to sage-grouse using the Southwest Pancake Summit and East Black Point leks, which would be located 1.1 and 1.6 miles, respectively, from the Northwest Main Access Route. Surface disturbance would result in approximately 3,098 acres of direct, long-term impacts to PGH under this alternative, in comparison to 3,077 acres under the Proposed Action (Table 4.9-5). Incorporating the Northern Power Line Route Alternative, project-related power lines outside the Plan area could impact approximately 238 acres of PPH and 429 acres of PGH, compared to approximately 1,374 acres of PPH and 1,341 acres of PGH under the Proposed Action (Table 4.9-5).

### ***Railroad Valley Springfish***

As described above for the Proposed Action, this alternative would have no effect on the Railroad Valley springfish.

### ***Eagles***

Construction-related impacts to eagles would be similar to those outlined under the Proposed Action, and similar indirect impacts including potential displacement are anticipated.

### ***Pygmy Rabbit***

Construction impacts to the pygmy rabbit under this alternative would be similar to those under the Proposed Action. The Northwest Main Access Route Alternative, Northern Power Line Route would result in the long-term removal of 2,293 acres of big sagebrush habitat, compared to 2,247 acres under the Proposed Action.

### ***Special Status Bats***

Construction impacts to special status bat species under this alternative would be similar to those under the Proposed Action. The Northwest Main Access Route Alternative, Northern Power Line Route would result in the long-term removal of 3,233 acres of shrubland and woodland habitat that may be used by bats for foraging and roosting, compared with 3,184 acres under the Proposed Action.

### ***Pale and Dark Kangaroo Mouse***

Construction impacts to the pale kangaroo mouse and dark kangaroo mouse under this alternative would be similar to those under the Proposed Action. The Northwest Main Access Route Alternative, Northern Power Line Route would result in the long-term removal of 193 acres of preferred habitat for the pale kangaroo mouse and 2,293 acres of preferred habitat for the dark kangaroo mouse, compared to 191 and 2,247 acres, respectively, under the Proposed Action.



**Bighorn Sheep**

As with the Proposed Action, the Northwest Main Access Route Alternative would not impact any bighorn sheep range.

**Special Status Raptors**

Construction impacts to special status raptor species under this alternative would be similar to those under the Proposed Action. The Northwest Main Access Route Alternative, Northern Power Line Route would result in the long-term removal of 3,233 acres of shrubland and woodland habitats that may be used by raptors for nesting and foraging, compared with 3,184 acres under the Proposed Action.

**Special Status Migratory Birds**

Construction impacts to special status migratory bird species under this alternative would be similar to those under the Proposed Action. The Northwest Main Access Route Alternative, Northern Power Line Route would result in the long-term removal of 3,233 acres of shrubland and woodland habitats that may be used by special status migratory birds for nesting and foraging, compared with 3,184 acres under the Proposed Action. This would include 747 acres of impact to pinyon-juniper woodland habitat (compared with 746 acres under the Proposed Action) and 2,293 acres of impact to big sagebrush habitat (compared with 2,247 acres under the Proposed Action).

**Operations, Maintenance, and Reclamation****Big Game**

Short- and long-term operations, maintenance, and reclamation impacts to big game, particularly mule deer and pronghorn antelope, would be similar as those outlined under the Proposed Action. This alternative would result in slightly greater impacts to year-long mule deer and pronghorn antelope range, as described above for construction-related impacts, but would possibly contribute to fewer collisions due to its distance away from a known migration route for mule deer.

**Small Mammals, Predatory Mammals, and Reptiles**

Impacts to small mammals, predatory mammals, and reptiles would be similar to those outlined under the Proposed Action

**Migratory Birds (Except Eagles)**

Impacts to migratory birds (except eagles) would be similar to those outlined under the Proposed Action.

**Special Status Species****Greater Sage-grouse**

Incorporating the Northern Power Line Route under this alternative, the reduced length of the power line in greater sage-grouse habitat would result in reduced risk of power line collision and raptor predation, thereby reducing short-term effects relative to the Proposed Action.

Under this alternative, up to 16 additional daily trips are anticipated on Green Springs Road and rest of the existing main access route during operations, compared with 292 additional daily trips under the Proposed Action. As a result, the Northwest Main Access Route, Northern



Power Line Route Alternative would likely result in fewer noise impacts on the Belmont Junction Southwest, Seligman Canyon, Hoppe Spring West, and Monte Cristo West leks. However, up to 292 additional daily trips are anticipated on the Northwest Main Access Route during the operations phase under this alternative. Therefore, this alternative may have comparatively greater noise impacts on the Southwest Pancake Summit and East Black Point leks, which would be located 1.1 and 1.6 miles, respectively, from the Northwest Main Access Route, Northern Power Line Route.

Other short- and long-term impacts to greater sage-grouse during the operations, maintenance, and reclamation phases of this alternative would be similar to those described above under the Proposed Action.

#### ***Railroad Valley Springfish***

As described above for the Proposed Action, this alternative would have no effect on the Railroad Valley springfish.

#### ***Eagles***

Impacts to eagles would be similar as those outlined under the Proposed Action.

#### ***Pygmy Rabbit***

Operations, maintenance, and reclamation impacts would be similar to those described above for the Proposed Action.

#### ***Special Status Bats***

Operations, maintenance, and reclamation impacts to special status bat species under this alternative would be similar to those described for the Proposed Action.

#### ***Pale and Dark Kangaroo Mouse***

Operations, maintenance, and reclamation impacts would be similar to those described above for the Proposed Action.

#### ***Bighorn Sheep***

As with the Proposed Action, the Northwest Main Access Route Alternative would not impact any bighorn sheep range.

#### ***Special Status Raptors***

Operations, maintenance, and reclamation impacts to special status raptor species would be similar to those described above for the Proposed Action.

#### ***Special Status Migratory Birds***

Operations, maintenance, and reclamation impacts to special status migratory birds would be similar to those described above for the Proposed Action.

### ***4.9.7 Northwest Main Access Route Alternative, Southern Power Line Route***

Impacts to wildlife from implementation of the Northwest Main Access Route, Southern Power Line Route would be similar to impacts described for the Proposed Action, except there would be more acres of disturbance to mule deer and pronghorn antelope year-round range,



potentially fewer wildlife collisions along Green Springs Road, and slightly more disturbance to greater sage-grouse PPH/PGH and leks. Details on impacts to all wildlife species categories analyzed under the Proposed Action are provided in the following sections for the Northwest Main Access Route Alternative, Southern Power Line Route. Additional information on impacts to wildlife is provided below. Figure 4.9-3 shows the Northwest Main Access Route Alternative, Southern Power Line Route in relation to wildlife resources.

## **Construction**

### **Big Game**

Construction-related impacts to big game, particularly mule deer and pronghorn antelope, would be similar to those outlined under the Proposed Action, with the exception of impacting approximately 41 more acres of year-round mule deer range. Approximately 66 more acres of year-round pronghorn antelope range would be impacted. Disturbance to mule deer crucial winter range would be similar to those described for the Proposed Action.

The Northwest Main Access Route Alternative, Southern Power Line Route would likely contribute to fewer big game collisions than the Proposed Action. This is because the Northwest Main Access Route would be located further from the Rubys mule deer migration corridor (which follows Green Springs Road south from US 50) compared to the Proposed Action and workers may prefer to stay in Eureka and approach the site from the west.

However, although Midway could direct commercial traffic associated with the mine to use the Northwest Main Access Route Alternative, Green Springs Road would still remain open to vehicular traffic. Therefore, temporary and short-term impacts due to collisions and traffic noise on Green Springs Road would still occur under the Northwest Main Access Route Alternative, though at a reduced level relative to the Proposed Action. Traffic on Green Springs Road would include up to 28 and 16 daily vehicle trips for construction and operations, respectively, compared with 354 and 292 daily vehicle trips under the Proposed Action.

Overall, impacts to big game would be short-term during construction.

### **Small Mammals, Predatory Mammals, and Reptiles**

Short-term construction-related impacts to small mammals, predatory mammals, and reptiles would be similar to those outlined under the Proposed Action.

### **Migratory Birds (Except Eagles)**

Construction-related impacts to migratory birds (except eagles), would be similar to those outlined under the Proposed Action, and the same acres of disturbance to nests are anticipated.

### **Special Status Species**

#### ***Greater Sage-grouse***

Under this alternative, Midway would direct commercial traffic associated with the Gold Rock Mine to use the Northwest Main Access Route Alternative, which would minimize effects to sage-grouse using leks in the vicinity of Green Springs Road. Leks would be the same distance from the components of the Northwest Main Access Route Alternative, Southern Power Line Route as described for the Proposed Action in Table 4.9-3 and Table 4.9-4. However, traffic patterns would vary from those under the Proposed Action, so the magnitude of impacts on individual leks may be different.



Although Midway could direct commercial traffic associated with the Gold Rock Mine to use the Northwest Main Access Route Alternative, Green Springs Road would remain open to vehicular traffic. Up to 28 additional daily trips are anticipated on Green Springs Road, compared to up to 354 additional daily trips under the Proposed Action. This lower amount of traffic compared to the Proposed Action would likely result in fewer noise impacts on the Belmont Junction Southwest, Seligman Canyon, Hoppe Spring West, and Monte Cristo West leks.

However, the Northwest Main Access Route is anticipated to have up to 354 trips per day during the construction phase and 292 trips per day during the operations phase. Noise from traffic using the Northwest Main Access Route Alternative, Southern Power Line Route could have temporary and long-term effects and comparatively greater noise impacts to sage-grouse using the Southwest Pancake Summit and East Black Point leks, which would be located 1.1 and 1.6 miles, respectively, from the Northwest Main Access Route.

Approximately 3,101 acres of direct, long-term disturbance to PGH would occur under this alternative, in comparison to 3,077 acres under the Proposed Action (Table 4.9-5). Incorporating the Southern Power Line Route Alternative, project-related power lines outside the Plan area could impact up to approximately 238 acres of PPH and 260 acres of PGH compared to approximately 1,374 acres of PPH and 1,341 acres of PGH under the Proposed Action (Table 4.9-5).

### ***Railroad Valley Springfish***

As described above for the Proposed Action, this alternative would have no effect on the Railroad Valley springfish.

### ***Eagles***

Construction-related impacts to eagles would be similar to those outlined under the Proposed Action, and similar indirect impacts including potential displacement are anticipated.

### ***Pygmy Rabbit***

Construction impacts to the pygmy rabbit under this alternative would be similar to those under the Proposed Action. The Northwest Main Access Route Alternative, Southern Power Line Route would result in the long-term removal of 2,304 acres of big sagebrush habitat, compared to 2,247 acres under the Proposed Action.

### ***Special Status Bats***

Construction impacts to special status bat species under this alternative would be similar to those under the Proposed Action. The Northwest Main Access Route Alternative, Southern Power Line Route would result in the long-term removal of 3,242 acres of shrubland and woodland habitat that may be used by bats for foraging and roosting, compared with 3,184 acres under the Proposed Action.

### ***Pale and Dark Kangaroo Mouse***

Construction impacts to the pale kangaroo mouse and dark kangaroo mouse under this alternative would be similar to those under the Proposed Action. The Northwest Main Access Route Alternative, Southern Power Line Route would result in the long-term removal of 198 acres of preferred habitat for the pale kangaroo mouse and 2,304 acres of preferred habitat for the dark kangaroo mouse, compared to 191 and 2,247 acres, respectively, under the Proposed Action.



**Bighorn Sheep**

As with the Proposed Action, the Northwest Main Access Route Alternative would not impact any bighorn sheep range.

**Special Status Raptors**

Construction impacts to special status raptor species under this alternative would be similar to those under the Proposed Action. The Northwest Main Access Route alternative, Southern Power Line Route would result in the long-term removal of 3,242 acres of shrubland and woodland habitats that may be used by raptors for nesting and foraging, compared with 3,184 acres under the Proposed Action.

**Special Status Migratory Birds**

Construction impacts to special status migratory bird species under this alternative would be similar to those under the Proposed Action. The Northwest Main Access Route Alternative, Southern Power Line Route would result in the long-term removal of 3,242 acres of shrubland and woodland habitats that may be used by special status migratory birds for nesting and foraging, compared with 3,184 acres under the Proposed Action. This would include 740 acres of impact to pinyon-juniper woodland habitat (compared with 746 acres under the Proposed Action) and 2,304 acres of impact to big sagebrush habitat (compared with 2,247 acres under the Proposed Action).

**Operations, Maintenance, and Reclamation****Big Game**

Short- and long-term operations, maintenance, and reclamation impacts to big game, particularly mule deer and pronghorn antelope, would be similar as those outlined under the Proposed Action. The Northwest Main Access Route Alternative would result in slightly greater impacts to year-long mule deer and pronghorn antelope range, as described above for construction-related impacts, but would possibly contribute to fewer collisions due to its distance away from a known migration route for mule deer.

**Small Mammals, Predatory Mammals, and Reptiles**

Impacts to small mammals, predatory mammals, and reptiles would be similar to those outlined under the Proposed Action

**Migratory Birds (Except Eagles)**

Impacts to migratory birds (except eagles) would be similar to those outlined under the Proposed Action.

**Special Status Species*****Greater Sage-grouse***

Incorporating the Southern Power Line Route under this alternative, the reduced length of the power line in greater sage-grouse habitat would result in reduced risk of power line collision and raptor predation, thereby reducing short-term effects relative to the Proposed Action.

During operations, up to 16 additional daily trips are anticipated on Green Springs Road and the rest of the existing main access route, compared with 292 additional daily trips under the Proposed Action. As a result, the Northwest Main Access Route, Southern Power Line Route



Alternative would likely result in fewer noise impacts on the Belmont Junction Southwest, Seligman Canyon, Hoppe Spring West, and Monte Cristo West leks. However, up to 292 additional daily trips are anticipated on the Northwest Main Access Route during the operations phase of this alternative. Therefore, this alternative may have comparatively greater noise impacts on the Southwest Pancake Summit and East Black Point leks, which would be located 1.1 and 1.6 miles, respectively, from the Northwest Main Access Route, Northern Power Line Route.

Other short- and long-term impacts to greater sage-grouse during the operations, maintenance, and reclamation phases of this alternative would be the same as those described above under the Proposed Action.

### ***Railroad Valley Springfish***

As described above for the Proposed Action, this alternative would have no effect on the Railroad Valley springfish.

### ***Eagles***

Impacts to eagles would be similar as those outlined under the Proposed Action.

### ***Pygmy Rabbit***

Operations, maintenance, and reclamation impacts would be similar to those described above for the Proposed Action.

### ***Special Status Bats***

Operations, maintenance, and reclamation impacts to special status bat species under this alternative would be similar to those described for the Proposed Action.

### ***Pale and Dark Kangaroo Mouse***

Operations, maintenance, and reclamation impacts would be similar to those described above for the Proposed Action.

### ***Bighorn Sheep***

As with the Proposed Action, the Northwest Main Access Route Alternative would not impact any bighorn sheep range.

### ***Special Status Raptors***

Operations, maintenance, and reclamation impacts to special status raptor species would be similar to those described above for the Proposed Action.

### ***Special Status Migratory Birds***

Operations, maintenance, and reclamation impacts to special status migratory birds would be similar to those described above for the Proposed Action.

## ***4.9.8 Modified County Road Re-Route Alternative***

Under this alternative, only existing roads would be used and no new road construction would occur along the county road re-route. No disturbance would occur. However, in the future, if White Pine County decides to upgrade the roads on the re-route, approximately 28 acres of PGH would be disturbed. In comparison, under the Proposed Action approximately 7 acres of



PGH would be disturbed during new road construction for the proposed county road re-route, and approximately 22 acres of PGH would be disturbed in the future, if White Pine County decides to upgrade the roads. Details on impacts to greater sage-grouse and other wildlife under the Modified County Road Re-Route Alternative are provided below. Figure 4.9-3 shows the Modified County Road Re-Route Alternative in relation to wildlife resources.

## **Construction**

### **Big Game**

Construction-related impacts to big game, particularly mule deer and pronghorn antelope, would be similar to those outlined under the Proposed Action, with the exception that if White Pine County decides to widen the road, this alternative would result in impacts to approximately 1 less acre of year-round mule deer and pronghorn antelope range. Disturbance acres to mule deer crucial winter and winter range would be similar to those described for the Proposed Action.

### **Small Mammals, Predatory Mammals, and Reptiles**

Short-term construction-related impacts to small mammals, predatory mammals, and reptiles would be similar to those outlined under the Proposed Action.

### **Migratory Birds (Except Eagles)**

Construction-related impacts to migratory birds (except eagles), would be similar to those outlined under the Proposed Action.

### **Special Status Species**

#### ***Greater Sage-grouse***

Under this alternative, leks would be the same distance from the components of the Modified County Road Re-route Alternative as described for the Proposed Action in Table 4.9-3 and Table 4.9-4; therefore, noise impacts on leks would be the same as described for the Proposed Action. Only existing roads would be used, and no new road construction would occur; therefore, no PGH would be disturbed by road construction along the county road re-route. In the future, if White Pine County decides to upgrade the roads along the re-route, approximately 28 acres of greater sage-grouse PGH would be disturbed. In comparison, under the Proposed Action approximately 7 acres of PGH would be disturbed during new road construction for the proposed county road re-route, and in the future, if White Pine County decides to upgrade the roads along the re-route, approximately 22 acres of greater sage-grouse PGH would be disturbed.

#### ***Railroad Valley Springfish***

As described above for the Proposed Action, this alternative would have no effect on the Railroad Valley springfish.

#### ***Eagles***

Construction-related impacts to eagles would be similar to those outlined under the Proposed Action, and similar indirect impacts including potential displacement are anticipated.

#### ***Pygmy Rabbit***

Construction impacts to the pygmy rabbit under this alternative would be similar to those under the Proposed Action. The Modified County Road Re-route Alternative would result in the long-



term removal of 2,244 acres of big sagebrush habitat, compared to 2,247 acres under the Proposed Action.

### ***Special Status Bats***

Construction impacts to special status bat species under this alternative would be similar to those under the Proposed Action.

### ***Pale and Dark Kangaroo Mouse***

Construction impacts to the pale kangaroo mouse and dark kangaroo mouse under this alternative would be similar to those under the Proposed Action. The Modified County Road Re-route Alternative would result in the long-term removal of 194 acres of preferred habitat for the pale kangaroo mouse and 2,244 acres of preferred habitat for the dark kangaroo mouse, compared to 191 and 2,247 acres under the Proposed Action, respectively.

### ***Bighorn Sheep***

As with the Proposed Action, the Modified County Road Re-route Alternative would not impact any bighorn sheep range.

### ***Special Status Raptors***

Construction impacts to special status raptor species under this alternative would be similar to those under the Proposed Action.

### ***Special Status Migratory Birds***

Construction impacts to special status migratory bird species under this alternative would be similar to those under the Proposed Action.

## **Operations, Maintenance, and Reclamation**

### **Big Game**

Short- and long-term operations, maintenance, and reclamation impacts to big game, particularly mule deer and pronghorn antelope, would be similar to those outlined under the Proposed Action. The Modified County Road Re-route Alternative would result in slightly greater impacts to year-long mule deer and pronghorn antelope range, as described above for construction-related impacts.

### **Small Mammals, Predatory Mammals, and Reptiles**

Impacts to small mammals, predatory mammals, and reptiles would be similar to those outlined under the Proposed Action.

### **Migratory Birds (Except Eagles)**

Impacts to migratory birds (except eagles) would be similar to those outlined under the Proposed Action.

### **Special Status Species**

#### ***Greater Sage-grouse***

Impacts to greater sage-grouse during the operations, maintenance, and reclamation phases of this alternative would be similar to those described above under the Proposed Action.



***Railroad Valley Springfish***

As described above for the Proposed Action, this alternative would have no effect on the Railroad Valley springfish.

***Eagles***

Impacts to eagles would be similar to those outlined under the Proposed Action.

***Pygmy Rabbit***

Operations, maintenance, and reclamation impacts would be similar to those described above for the Proposed Action.

***Special Status Bats***

Operations, maintenance, and reclamation impacts to special status bat species under this alternative would be similar to those described for the Proposed Action.

***Pale and Dark Kangaroo Mouse***

Operations, maintenance, and reclamation impacts would be similar to those described above for the Proposed Action.

***Bighorn Sheep***

As with the Proposed Action, the Modified County Road Re-route Alternative would not impact any bighorn sheep range.

***Special Status Raptors***

Operations, maintenance, and reclamation impacts to special status raptors would be similar to those described above for the Proposed Action.

***Special Status Migratory Birds***

Operations, maintenance, and reclamation impacts to special status migratory birds would be similar to those described above for the Proposed Action.

***4.9.9 Western Tailings Facility Alternative***

Under this alternative, impacts to wildlife resources would be similar in types, intensity and duration to those described for the Proposed Action, except that the more compact facility footprint would result in fewer acres of disturbance to mule deer and pronghorn antelope habitat, slightly more disturbance to raptor nests (except eagles), slightly less potential to indirectly impact active eagle nests, and slightly less disturbance to greater sage-grouse PPH/PGH and leks. By moving the TSF and the eastern fence line, surface disturbance would impact approximately 744 fewer acres of mule deer crucial winter range than under the Proposed Action. Details on impacts to all wildlife species categories analyzed under the Proposed Action are provided in the following sections. Figure 4.9-4 shows the Western Tailings Storage Facility Alternative in relation to wildlife resources.



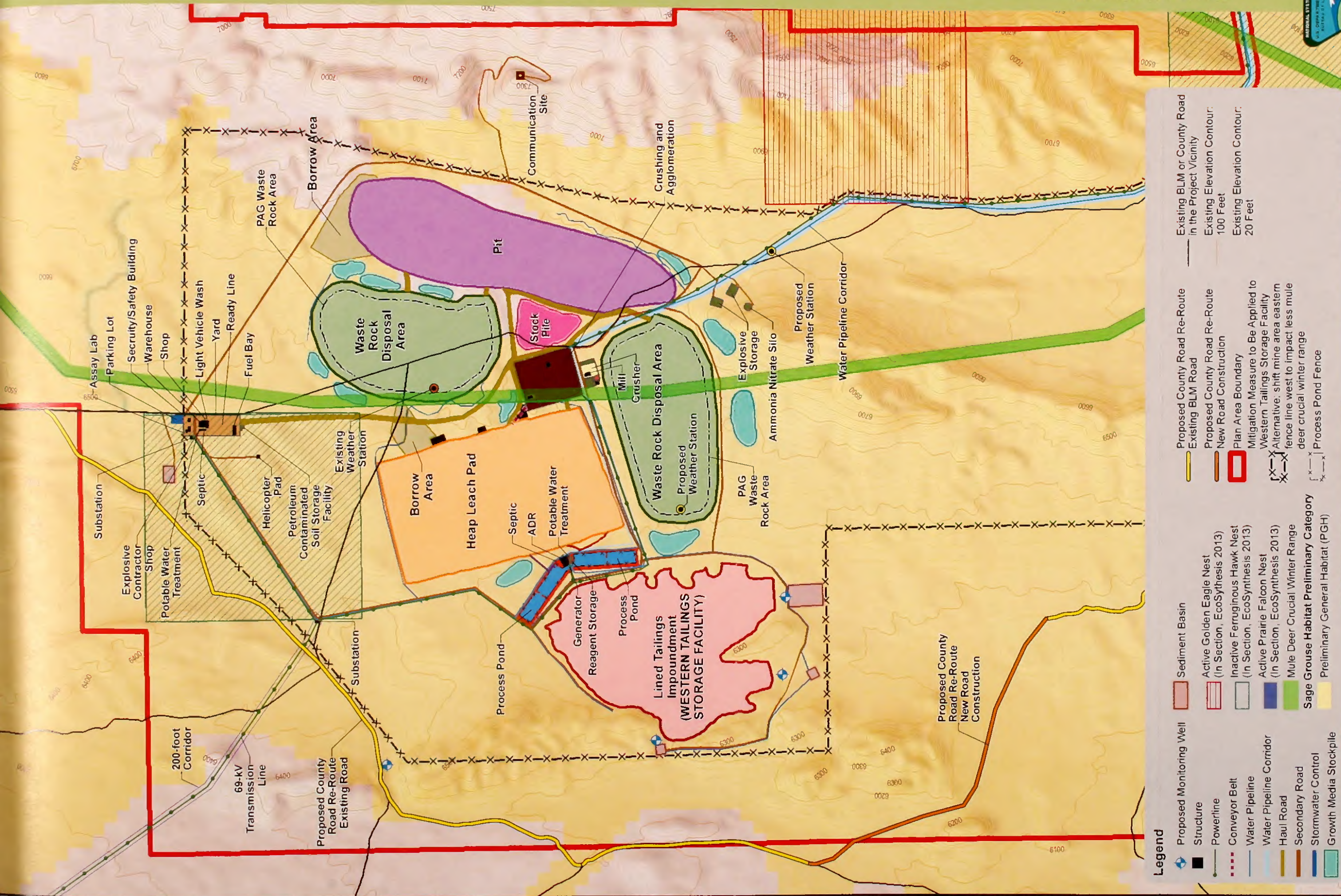


FIGURE 4 9-4  
WILDLIFE IMPACT ANALYSIS, WESTERN  
TAILINGS STORAGE FACILITY ALTERNATIVE

MIDWAY GOLD US INC.  
GOLD ROCK MINE PROJECT

MAPPEO DATE: 9/18/2014



U.S. BUREAU OF LAND MANAGEMENT  
ELY DISTRICT  
EGAN FIELD OFFICE

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## **Construction**

### **Big Game**

Construction-related impacts to big game, particularly mule deer and pronghorn antelope, would differ from those outlined under the Proposed Action in that there would be approximately 353 fewer acres of disturbance to mule deer range (744 fewer acres of disturbance to crucial winter range, but 391 more acres of disturbance to year-round range). Moving the fence line under this alternative would open up 267 acres that would have been between the facilities and within the fence under the Proposed Action and 478 acres that would have been within the facility footprint under the Proposed Action. The Western Tailings Facility Alternative would also have approximately 139 fewer acres of disturbance to year-round pronghorn antelope range. Therefore, in terms of impacts to mule deer and pronghorn antelope range, there would be an overall net benefit from implementing this alternative over the Proposed Action.

### **Small Mammals, Predatory Mammals, and Reptiles**

Construction-related impacts to small mammals, predatory mammals, and reptiles would be similar to those outlined under the Proposed Action.

### **Migratory Birds (Except Eagles)**

Construction-related impacts to migratory birds (except eagles) would be similar to those outlined under the Proposed Action, with the exception of impacting approximately 127 fewer acres of woodland and shrubland habitat.

### **Special Status Species**

#### ***Greater Sage-grouse***

Under this alternative, leks would be the same distance from the components of the Western Tailings Facility Alternative as described for the Proposed Action in Table 4.9-3 and Table 4.9-4; therefore, noise impacts on leks would be the same as described for the Proposed Action. Surface disturbance would impact approximately 19 acres of PPH and 2,957 acres of PGH. In comparison, approximately 19 acres of PPH and 3,077 acres of PGH, which is approximately 120 greater acres of PGH, would be disturbed under the Proposed Action (Table 4.9-5). Other effects to greater sage-grouse would be the same as under the Proposed Action.

#### ***Railroad Valley Springfish***

As described above for the Proposed Action, this alternative would have no effect on the Railroad Valley springfish.

#### ***Eagles***

Construction-related impacts to eagles would be similar to those outlined under the Proposed Action, with slightly less potential to indirectly impact active eagle nests because the tailings facility would be shifted west further from the active eagle nest on Meridian Ridge. In addition, approximately 10 fewer transmission line poles would be located in sections with active eagle nests.

#### ***Pygmy Rabbit***

Construction impacts to the pygmy rabbit under this alternative would be similar to those under the Proposed Action. The Western Tailings Facility Alternative would result in the long-term removal of 2,141 acres of big sagebrush habitat, compared to 2,247 acres under the Proposed Action.



***Special Status Bats***

Construction impacts to special status bat species under this alternative would be similar to those under the Proposed Action. The Western Tailings Facility Alternative would result in the long-term removal of 3,057 acres of shrubland and woodland habitat that may be used by bats for foraging and roosting, compared with 3,184 acres under the Proposed Action.

***Pale and Dark Kangaroo Mouse***

Construction impacts to the pale kangaroo mouse and dark kangaroo mouse under this alternative would be similar to those under the Proposed Action. The Western Tailings Facility Alternative would result in the long-term removal of 316 acres of preferred habitat for the pale kangaroo mouse and 2,141 acres of preferred habitat for the dark kangaroo mouse, compared to 191 and 2,247 acres under the Proposed Action, respectively.

***Bighorn Sheep***

As with the Proposed Action, the Western Tailings Facility Alternative would not impact any bighorn sheep range.

***Special Status Raptors***

Construction impacts to special status raptor species under this alternative would be similar to those under the Proposed Action. The Western Tailings Facility Alternative would result in the long-term removal of 3,057 acres of shrubland and woodland habitats that may be used by raptors for nesting and foraging, compared with 3,184 acres under the Proposed Action.

***Special Status Migratory Birds***

Construction impacts to special status migratory bird species under this alternative would be similar to those under the Proposed Action. The Western Tailings Facility Alternative would result in the long-term removal of 3,057 acres of shrubland and woodland habitats that may be used by special status passerines for nesting and foraging, compared with 3,184 acres under the Proposed Action. This would include 599 acres of impact to pinyon-juniper woodland habitat (compared with 746 acres under the Proposed Action) and 2,141 acres of impact to big sagebrush habitat (compared with 2,247 acres under the Proposed Action).

**Operations, Maintenance, and Reclamation*****Big Game***

Short- and long-term operations, maintenance, and reclamation impacts to big game, particularly mule deer and pronghorn antelope, would be similar to those outlined under the Proposed Action. The Western Tailings Facility Alternative would result in slightly greater impacts to year-round mule deer and pronghorn antelope range, as described above for construction-related impacts.

***Small Mammals, Predatory Mammals, and Reptiles***

Impacts to small mammals, predatory mammals, and reptiles would be similar to those outlined under the Proposed Action.

***Migratory Birds (Except Eagles)***

Impacts to migratory birds (except eagles) would be similar to those outlined under the Proposed Action.



## **Special Status Species**

### ***Greater Sage-grouse***

Impacts to greater sage-grouse during the operations, maintenance, and reclamation phases of this alternative would be similar to those described above under the Proposed Action, except that the Western Tailings Storage Facility Alternative mine area fence line would cross 3 more miles of PGH than the Proposed Action fence line would cross.

### ***Railroad Valley Springfish***

As described above for the Proposed Action, this alternative would have no effect on the Railroad Valley springfish.

### ***Eagles***

Impacts to eagles would be similar to those outlined under the Proposed Action.

### ***Pygmy Rabbit***

Operations, maintenance, and reclamation impacts to pygmy rabbits would be similar to those described above for the Proposed Action.

### ***Special Status Bats***

Operations, maintenance, and reclamation impacts to special status bat species under this alternative would be similar to those described for the Proposed Action.

### ***Pale and Dark Kangaroo Mouse***

Operations, maintenance, and reclamation impacts to pale and dark kangaroo mice would be similar to those described above for the Proposed Action.

### ***Bighorn Sheep***

As with the Proposed Action, the Western Tailings Facility Alternative would not impact any bighorn sheep range.

### ***Special Status Raptors***

Operations, maintenance, and reclamation impacts to special status raptors would be similar to those described above for the Proposed Action.

### ***Special Status Migratory Birds***

Operations, maintenance, and reclamation impacts to special status migratory birds would be similar to those described above for the Proposed Action.

## **4.9.10 No Action Alternative**

Under the No Action Alternative, the Proposed Action would not be constructed and there would be no associated project impacts on wildlife resources excluding the previously authorized exploration activities. Impacts of the previously authorized exploration activities were described in the EA for those activities (BLM 2012h). Existing disturbances and current trends for wildlife populations and habitats in the area would continue along current trajectories.



#### 4.9.11 Additional Monitoring and Mitigation

The following monitoring and mitigation measures would reduce and offset impacts on wildlife, including special status species.

##### **All action alternatives:**

##### **Monitoring**

##### **Special Status Wildlife – Sage-grouse:**

- Based on current best available science, Midway would limit project-related noise at leks to less than 10 decibels above ambient from March 1 through May 15 from one hour before sunrise until three hours after sunrise. Midway would submit a noise monitoring and mitigation plan subject to BLM approval that specifies the steps Midway would take to ensure that noise levels would remain below 10 decibels greater than ambient. This noise monitoring and mitigation plan would provide the protocols, equipment, standards, locations, frequency, and comparative analysis and reporting methods for noise monitoring; mitigation measures; and adaptive management strategies to reduce potential impacts to sage-grouse and sage-grouse habitat. This noise monitoring and mitigation plan would be revisited and amended as necessary each year following the collection and review of all available data and resources. Midway would coordinate with the BLM and NDOW to develop cost effective strategies to differentiate between Gold Rock Mine project and non-project noise sources.

Effectiveness: This measure would provide additional information, not currently available to assess potential impacts to greater sage-grouse and its habitat from Gold Rock Mine Project traffic noise near leks. Effects on other resources: Noise monitoring likely would not impact other resources.

- Midway would provide at least one strutting season of baseline ambient noise data prior to beginning construction activities. Effectiveness: Collecting these data prior to construction would establish a site-specific ambient baseline. This measured ambient baseline forms the basis for effective noise monitoring. Effects on other resources: Noise monitoring likely would not impact other resources.

##### **Mitigation**

##### **Big Game – Mule Deer:**

- To offset mule deer crucial winter range lost through project-related activities, Midway could coordinate with NDOW to develop and implement reasonable mitigation measures. Mitigation measures could include monetary compensation and/or off-site habitat conservation or restoration of mule deer crucial winter range, as appropriate. Because locatable mineral mining is a nondiscretionary action and mule deer is not a special status species, the BLM is not able to require such offset mitigation. Effectiveness: The effectiveness would depend on any conservation measures chosen. Effects on other resources: Off-site mitigation could impact soils, vegetation, and forest products.

##### **Special Status Wildlife – Greater Sage-grouse:**

- To minimize the possibility of impacting greater sage-grouse due to project-related surface disturbance activities and raptor predation of sage-grouse within 1,968 feet (600



meters) of project-related power lines outside the Plan area, Midway would coordinate with the BLM and NDOW to develop and implement mitigation measures. Mitigation measures would be negotiated and could include off-site conservation or restoration of sage-grouse habitat at a rate of 3:1 for PPH and 2:1 PGH at location(s) to be determined by the interested parties. These measures are consistent with the MOU between the mining industry and the BLM (Partnership for the Conservation and Protection of the Greater Sage-Grouse and Greater Sage-Grouse Habitat). Site-specific studies would be used to determine habitat and use as the Nevada State Plan provides for ground truthing.

Effectiveness: These measures could be effective in mitigating impacts to PPH and PGH. Effects on other resources: Implementing some of these mitigation measures could negatively impact socioeconomic resources. Midway would have to pay for this mitigation, which could negatively impact the economic viability of the operation. Impacts to soils, vegetation, or forest products related to off-site conservation or restoration activities could occur.

- To minimize the possibility of impacting greater sage-grouse strutting and breeding due to project-related noise, if noise monitoring shows that noise levels caused by Midway actions exceed the applicable limits during the monitoring period, Midway would implement mitigation measures to reduce project noise levels to below threshold values as provided for in the noise monitoring and mitigation plan. Mitigation measures could include:
  - Reducing vehicle speed limits on the selected main access route during the period from March 1 through May 15;
  - Restricting the use of engine brakes;
  - Implementing noise-dampening measures on mine-related sources;
  - Providing payment to a sage-grouse mitigation bank, on-site habitat restoration; or
  - Scheduling deliveries and shift changes outside of the strutting period (March 1 to May 15 from 1 hour before sunrise to 3 hours after sunrise) and preventing mine-related traffic from using Easy Junior Road or Green Springs Road during the strutting period.

Effectiveness: Implementing measures such as these could be effective in mitigating noise-related impacts to sage-grouse. Effects on other resources: Preventing mine-related traffic from using Easy Junior Road and Green Springs Road during the strutting period would negatively impact socioeconomic resources. Making payments to a mitigation bank or adjusting work schedules could reduce efficiency and productivity at the mine, which would negatively impact the economic viability of the operation. Performing on-site restoration could impact soils and vegetation resources.

- Avoiding adverse impacts to PPH is preferred. However, if the proposed second well must be installed in PPH, Midway would bury the power line to the well. Effectiveness: Burying the power line would minimize impacts to sage-grouse from predation. Effects on other resources: Burying the pipeline would impact soils and vegetation resources.

#### Special Status Wildlife – Ferruginous Hawks:

- To minimize the possibility of impacting ferruginous hawk nesting and brood rearing due to project-related surface disturbance, if a ferruginous hawk nest becomes active in an



area where a substantial number of power poles are proposed to be constructed, a separate pole with a platform could be constructed to provide an alternative nesting location for the ferruginous hawk. *Effectiveness*: Building poles and platforms for ferruginous hawks could minimize impacts to ferruginous hawks from electrocution. *Effects on other resources*: Building poles and platforms for ferruginous hawks could negatively impact soils, and vegetation resources in the area immediately surrounding each pole, and could negatively impact economic resources.

### **All action alternatives except the Western Tailings Storage Facility Alternative:**

#### **Mitigation**

##### **Big Game**

- To minimize mule deer crucial winter range lost through project-related activities, Midway would move the eastern boundary of the fenced mine area west to within a technically safe and secure distance of proposed mine facilities. This shift in the fence would maintain access to 1,248 acres of mule deer crucial winter range. As recommended in the Ely District Approved Resource Management Plan (BLM 2008b), Midway would avoid performing surface disturbing exploration activities as appropriate in mule deer crucial winter range from November 1 to March 31. *Effectiveness*: Moving the fence line would maintain access to a larger area of mule deer crucial winter range. *Effects on other resources*: Moving the fence line would impact a smaller area of soils and vegetation during installation of the fence, and would maintain a larger area of access for big game, range and wild horse forage resources.

## **4.10 RANGE RESOURCES**

### **4.10.1 Analysis Areas**

The analysis area for the Proposed Action, Northwest Main Access Route Alternative, Northern and Southern power line routes, Modified County Road Re-Route Alternative, and Western Tailings Storage Facility Alternative is:

- the Bull Corner/Poison Patch and Green Springs Valley grazing use areas in the Duckwater Allotment,
- the Monte Cristo Allotment,
- the West and East pastures of the South Pancake Allotment, and
- the 18 Mile House grazing use area and South Newark grazing pasture in the Newark Allotment.

The analysis area for the Northern and Southern power line route alternatives is the Proposed Action analysis area with one modification:

- No consideration of the 18 Mile House grazing use area, given that no surface disturbance is proposed in the area under this alternative.

The analysis area for the No Action Alternative is the approved, amended 2011 Exploration Plan area.

Allotments in the project area are shown on Figure 3.10-1.



### 4.10.2 Indicators

Impacts to range resources were evaluated by considering the following:

- Number of livestock allotments that occur within the analysis area, and the AUMs supported by the allotments, or livestock currently approved to use these areas;
- Acres of rangeland to be affected by the project;
- Acres of land within an allotment or pasture of an allotment to be affected by the project;
- Percentage of each allotment within the fenced portion of the analysis area that would be affected; and
- Estimated number of AUMs of forage lost in each affected allotment or pasture of an allotment.

An AUM is the amount of forage required to sustain a cow and a calf for one month, or approximately 800 pounds of forage.

### 4.10.3 Proposed Action

Anticipated environmental impacts to livestock and grazing resources include the loss of forage due to ground disturbance and restricted access to the fenced active mining areas for security and safety reasons. Access to water sources for livestock would not be an issue as the available water sources are outside the disturbance area and groundwater pumping and use would not affect available surface water sources. The anticipated impacts are described below.

#### Construction

The primary impact on rangeland resources resulting from the Proposed Action would be the loss of access to vegetation or forage and land area within the fenced mine area for the life of the project. Additionally, the possibility exists for direct impacts to livestock from traffic accidents. The 8,757-acre mine area, located within the Duckwater Allotment, would be fenced, restricting cattle from accessing the active areas of the mine during construction and operation. Water pipeline maintenance, entrance facility construction or maintenance, road construction or widening, and power line and well construction or maintenance would result in 140 additional acres of disturbance to rangelands. Proposed disturbance in defined locations totals approximately 8,900 acres. In addition, approximately 400 acres within the Plan area would be disturbed for exploration during the construction and operation of the mine. The exact location of this disturbance is unknown at this time but represents an additional 4 percent of the total area impacted. In total approximately 9,300 acres of grazing land could be impacted.

In total, the disturbance area includes 23 acres of 18 Mile House Use Area of the Newark allotment (less than 0.01 percent of the grazing use area), 8,847 acres of the Duckwater allotment (27 percent of the Bull Corner/Poison Patch grazing use area and 24 acres in the Green Springs grazing use area (less than 0.01 percent of the Green Springs grazing use area) and 4 acres of the South Pancake allotment (less than 0.01 percent of the West pasture). Assuming that 40 acres is needed to support one AUM, the maximum potential impact would be a temporary loss of 222 AUMs (less than 1 AUM in the Newark allotment, 221 AUMs in the Bull Corner/Poison Patch grazing unit of the Duckwater Grazing Allotment and less than 1 AUM in the Green Springs grazing unit within the Duckwater Grazing Allotment) or less than 1 percent of the active permitted use for the life of the mine (Table 4.10-1).



The actual quantity of forage lost would also depend on other factors such as the type of plant communities impacted, the availability of key forage species such as native perennial bunchgrasses and winterfat, and annual climate conditions that affect forage production. The loss of rangeland and forage would temporarily displace livestock during construction and operations of the Proposed Action. All of the fenced acres, and the majority of the impacts, would be located within the Bull Corner/Poison Patch grazing use area of the Duckwater allotment.

As indicated in Section 3.10, the BLM manages rangelands to achieve Northeast Great Basin Resource Advisory Council Standards and evaluations are made periodically to determine whether goals are being met. The grazing permits themselves for the Newark, and Duckwater and South Pancake allotments would not be modified immediately because of the loss of forage resulting from the Proposed Action. The affected allotment(s) would continue to be monitored for forage conditions and any appropriate adjustments to the long-term grazing permit(s) would be made at a future date as the permits come up for renewal on the expiration date. BLM would continue to coordinate with the livestock permittees on an annual basis to implement grazing practices that achieve or make progress towards achievement of the Standards. The level of coordination required between BLM and the permittees to achieve these health standards would increase slightly. There may be a minor loss in the flexibility of the Duckwater allotment operations to use and distribute cattle or sheep over a new smaller land area, thus making it more difficult to achieve these standards.

Blasting may occur in rocky areas during installation of the Proposed Action power poles or maintenance road and could result in short-term noise impacts to livestock in the immediate vicinity of the blasting site.

Indirect effects to range resources could include impacts due to changes in vegetative communities, forage productivity and noxious weeds as described in Section 4.8.

### **Operations, Maintenance, and Reclamation**

If the TSF were to fail, impacts could include short-term or long-term changes to resources. The intensity and extent of the effects would depend on the size of the failure. Short-term or long-term loss or reduction in productivity of forage resources for range could occur.

A long-term loss of approximately 500 acres of rangeland would result from the unreclaimed portions of the Proposed Action (pit, the process pond, stormwater control facilities, sediment basins, and disturbance associated with the proposed county road re-route if White Pine County decides to widen the road) (Figure 2.3-15). The long-term loss would be less than 1 percent of the allotment areas. Successful reclamation of and potential increased forage productivity associated with the WRDAs may partially compensate for the permanent loss of 12 AUMs of forage. Under the Proposed Action, after reclamation impacts to range resources would be long term. Approximately 3,500 acres of vegetation would be reclaimed at the end of the project, and access to approximately 8,800 acres of rangeland would be restored.

#### ***4.10.4 Northern Power Line Route Alternative***

Impacts during construction and operations, maintenance and reclamation under the Northern Power Line Route Alternative would be similar in type, intensity and duration to the Proposed Action, except that construction disturbance would be 33 acres less than that of the Proposed Action.



Table 4.10-1 Impacts To Grazing Allotments under the Proposed Action

Allotment	Grazing Area/Pasture	Total Area of Grazing Area/ Pasture Area (acres)	Total Active AUMs	Short-Term Disturbance Within Allotment <sup>1</sup> (acres)	Total Number of AUMs Lost to Short-Term Disturbance	Long-Term Disturbance Within Allotment (acres)	Total Number of AUMs Lost to Long-Term Disturbance
Newark Grazing Allotment	South Newark Grazing Area	15,901	535	0	0	0	0
	18 Mile House Grazing Area	38,822	1,204	23	<1	0	0
South Pancake Grazing Allotment	West Pasture	22,825	715	4	<1	0	0
Duckwater Grazing Allotment	Green Springs Valley	32,609	868	24	<1	0	0
	Bull Corner/Poison Patch	73,901	3,503	8,847	221	491	12
<b>All Allotments</b>		<b>168,157</b>	<b>14,795</b>	<b>8,897 (5%)</b>	<b>222 (&lt;2%)</b>	<b>491 (&lt;1%)</b>	<b>12 (&lt;1%)</b>

## Note

<sup>1</sup> In addition to this disturbance in known locations, up to approximately 400 acres of vegetation would be disturbed during exploration activities throughout the Plan area.



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#### **4.10.5 Southern Power Line Alternative**

Impacts during construction and operations, maintenance and reclamation under the Southern Power Line Alternative would be similar in type, intensity and duration to the Proposed Action, except the construction disturbance would be 34 acres less than that of the Proposed Action.

#### **4.10.6 Northwest Main Access Route Alternative, Northern Power Line Route**

Impacts during construction and operations, maintenance and reclamation under the Northwest Main Access Route Alternative, Northern Power Line Route would be similar in type, intensity and duration to those described under the Proposed Action, except that approximately 14 additional acres and approximately 36 additional acres of short-term disturbance would occur in the Newark Allotment and the Duckwater Allotment respectively, and approximately 4 fewer acres of short-term disturbance would occur in the South Pancake Allotment when compared to the Proposed Action. Construction of this alternative main access route would result in approximately 10 acres of short-term surface disturbance related to obtaining gravel from two 5-acre pits located along the route. These areas would be reclaimed after completion of road construction.

#### **4.10.7 Northwest Main Access Route Alternative, Southern Power Line Route**

Impacts during construction and operations, maintenance and closure under the Northwest Main Access Route Alternative, Southern Power Line Route would be similar in type, intensity and duration to those described under the Proposed Action, except that an additional 15 acres and 38 acres of short-term disturbance would occur in the Newark Allotment and the Duckwater Allotment respectively, and 4 fewer acres of short-term disturbance would occur in the South Pancake Allotment when compared to the Proposed Action. Construction of this alternative main access route would result in approximately 10 acres of short-term surface disturbance related to obtaining gravel from two 5-acre pits located along the route. These areas would be reclaimed after completion of road construction.

#### **4.10.8 Modified County Road Re-Route Alternative**

Impacts during construction and operations, maintenance and closure under the Modified County Road Re-Route Alternative would be similar in type, intensity and duration to the Proposed Action, except 7 fewer acres of construction disturbance would occur compared to the Proposed Action. In the future, if White Pine County decides to widen the county road re-route, an additional 28 acres of disturbance would occur. In comparison, the Proposed Action would result in 22 acres of disturbance due to road widening). Overall 1 less acre of disturbance would occur compared to the Proposed Action.

#### **4.10.9 Western Tailings Storage Facility Alternative**

Impacts during construction and operations, maintenance, and closure under the Western Tailings Storage Facility Alternative would be similar in type, intensity and duration to the Proposed Action, except the total fenced area in the Duckwater Allotment would be 1,708 acres less than under the Proposed Action.

A long-term loss of 453 acres of rangeland would result from the unreclaimed portions of the Western Tailings Storage Facility Alternative. This loss would be 38 acres less than the long-term impacts from the Proposed Action. The long-term loss would impact 11.3 AUMs of forage.



Under the Western Tailings Storage Facility Alternative, after reclamation, impacts to range resources would be long term.

#### ***4.10.10 No Action Alternative***

Under the No Action Alternative, the Proposed Action would not be constructed and there would be no associated project impacts on range resources excluding the authorized exploration activities (Section 2.2).

#### ***4.10.11 Additional Monitoring and Mitigation***

No additional monitoring is required. No mitigation measures are required.

### **4.11 FOREST PRODUCTS AND FUELS**

#### ***4.11.1 Analysis Areas***

The Proposed Action analysis areas are the same as those used for soils (Section 4.5.1).

#### ***4.11.2 Indicators***

Indicators for forest products resources focus on acreage of forest community disturbance and how that might potentially impact permitted harvest and traditional use of forest product resources. For fuel resources, indicators focus on the potential impacts to fuel availability. The following factors were considered in determining effects on forest product and fuel resources:

- Magnitude of disturbance or loss;
- Percentage of potential permitted harvest areas that would be affected;
- Susceptibility of the resource to disturbance or the alterations to traditional use; and
- Potential impact to available fuels.

#### ***4.11.3 Proposed Action***

##### **Construction**

##### **Forest Products**

Under the Proposed Action, loss of vegetation would result through removal during construction of a segment of new road along the proposed county road re-route, widening of segments of existing roads along the proposed county road re-route if White Pine County determines a need in the future; widening and maintaining of new mine site roads; pit excavation, construction of the WRDAs, heap leach facility, process facilities and ponds, growth media stockpiles, water supply well and associated infrastructure, the TSF, and shop facilities and yards. Proposed disturbance in defined locations totals approximately, 8,900 acres. Approximately 400 additional acres within the Plan area would be disturbed for exploration during the construction and operation of the mine. The exact location of this disturbance is unknown at this time but represents an additional 4 percent of the total area impacted. In total approximately 9,300 acres of forest products could be impacted.

The Great Basin Pinyon-Juniper vegetation community covers 5,746 acres of the analysis area. Additional information about impacts to the various vegetation types is described in Section 4.8. Direct impacts to vegetation would include the removal of 746 acres of pinyon-juniper woodland.



Approximately 115 acres of pinyon-juniper woodlands, or less than one percent of the vegetation community, would be permanently lost as they would not be reclaimed. Table 4.11-1 shows the estimated short-term and long-term disturbance within the pinyon-juniper woodland community type for the Proposed Action and alternatives. Pinyon-juniper woodlands are common and widespread throughout the analysis area and areas adjacent to the project. Direct effects on forest products would be long term.

**Table 4.11-1 Disturbance to Great Basin Pinyon-Juniper Woodlands Under the Proposed Action and Alternatives<sup>1</sup>**

Great Basin Pinyon-juniper Woodland	Area Impacted (acres)						
	Proposed Action	Northern Power Line Route Alternative	Southern Power Line Route Alternative	Northwest Main Access Route Alternative (North)	Northwest Main Access Route Alternative (South)	Modified County Road	Western Tailings Storage Facility Alternative
Short-term Disturbance: Vegetation Removal During Construction Operation	746	729	726	747	739	746	599
Total Short-term Disturbance: Lack of Access and Vegetation Removal During Mine Construction and Operation	2,650	2,633	2,630	2,651	2,643	2,650	1,471
Long-term Disturbance: Areas Not Subject to Reclamation (Unreclaimed)	115	115	115	115	115	115	109

Note

- 1 In addition to this disturbance in known locations, up to approximately 400 acres of vegetation would be disturbed during exploration activities throughout the Plan area.

The Proposed Action would likely result in the transition to grass and forb dominated vegetation types in areas following reclamation. It is likely that over the long term, shrubs and trees may naturally recolonize disturbed areas. It may take 75 to 100 years for singleleaf pinyon and Utah juniper trees to mature (Barney and Frischknecht 1974). The Proposed Action is located in an area where traditional use of singleleaf pinyon and Utah juniper is not a common occurrence (Mabey 2013), and the long-term change in vegetation and loss of woodland productivity would not result in significant impacts to forest products.

In addition to the direct removal of vegetation, forest products and harvest would be indirectly impacted by the establishment of a perimeter fence around the 8,757-acre active mine area. 2,650 acres of pinyon-juniper woodland would be unavailable for forest product collection or use during the life of the mine. The only commercial fuelwood harvest permit that falls within the analysis area is located northeast of the Plan along the northern portion of Green Springs Road area. Approximately 4.2 acres (or 28 percent) of the 14.9-acre permit fall within the analysis area. No disturbance is proposed in this area. However, use of the existing main access route may create dust that may impacted vegetation. Dust contributes to “edge effects”; near roads and construction sites dust can coat surrounding vegetation and disrupt photosynthesis, respiration, and transpiration of plants, ultimately leading to decreased vegetation productivity (Coffin 2007; Trombulak and Frissell 2000). In turn, this could decrease vegetation quality and



viability beyond the actual footprint of direct disturbance. Any impacts to this permitted area would be short term.

A 1,220-acre commercial pine nut collection area is located within the analysis area, northeast of the Plan area near the junction of US 50 and Green Springs Road. This commercial pine nut area is active and was last used in 2011 (BLM 2014). Under the Proposed Action, no disturbance would occur within this area. Similar to the impacts to commercial firewood, all of these impacts would be associated with road dust and any impacts to pine nut harvest would likely be short term.

Other indirect impacts to forest products might include degradation of habitat due to soil compaction, increased accesses and the increased potential for noxious and non-native, invasive weed establishment as described in Section 4.8. These impacts would likely be long term.

## Fuels

Calculations of fuel availability and loading were made based on determined means provided in “Guide for Quantifying Fuels in the Sagebrush Steppe and Juniper Woodlands of the Great Basin, Technical Note 430” (Stebbleton and Bunting 2009). The calculated loadings are shown in Tables 4.11-2 and 4.11-3. The fuel loading calculations provide information about the potential fuel availability in the case of fire in the analysis area, and could provide a basis for evaluating the potential impacts from the Proposed Action to fuels. Based on these calculations, the Proposed Action would remove approximately 940 tons of available fuel wood. This is a reduction of approximately five percent of available fuels within the analysis area.

Throughout the Intermountain West, there has been a documented increase in the density and distribution of pinyon-juniper forests over the past 130 years. This change has been attributed to the reduction in fire frequency (Miller et al. 2000). Studies are now indicating that fire may play an important role in maintaining plant communities within the Great Basin Region (Miller et al. 2001). Although the impacts to pinyon-juniper woodlands from the Proposed Action may not fall within a recognized fire management program, the reduction of fuels may have a beneficial effect on vegetative communities. Any impacts to fuels from the Proposed Action would likely be long term.

**Table 4.11-2 Proposed Action Fuel Availability and Loading**

Type of Loading	Fuel Available Within Proposed Action Project Area (tons)
Approximate Live Loading <sup>1</sup>	37,487
Approximate Dead Loading <sup>2</sup>	2,434
Available Loading <sup>3</sup>	15,968

Notes:

1 Fuels available as live foliage

2 Fuels available as dead wood

3 Available loading assumes 100% of foliage and 50% of the 1-hour fuels are available to burn at any given time.

Source: Scott and Reinhart 2001



**Table 4.11-3 Disturbances to Fuel Availability and Loading Under the Proposed Action and Alternatives**

<b>Alternative</b>	<b>Live Loading<sup>1</sup> (tons)</b>	<b>Dead Loading<sup>2</sup> (tons)</b>	<b>Available Loading<sup>3</sup> (tons)</b>
Proposed Action	2,171	136	939
Northern Power Line Route Alternative	2,059	128	892
Southern Power Line Route Alternative	2,036	127	882
NW Main Access Route Alternative - North	2,179	136	943
NW Main Access Route Alternative - South	2,128	133	921
Modified County Road Re-Route Alternative	2,171	136	939
Western Tailings Storage Facility Alternative	1,631	102	706

Notes:

1 Fuels available as live foliage

2 Fuels available as dead wood

3 Available loading assumes 100% of foliage and 50% of the 1-hour fuels are available to burn at any given time (Scott and Reinhart 2001)

## **Operations, Maintenance, and Reclamation**

### **Forest Products**

Operation and maintenance activities for the Proposed Action would cause short-term impacts to forest products as a result of active mining operations and continued access for repairs and maintenance. If the TSF were to fail, impacts could include short-term or long-term changes to resources. The intensity and extent of the effects would depend on the size of the failure. Short-term or long-term loss or reduction in productivity of forest products (pinyon-juniper woodland communities) could occur.

Once mining is completed, reclamation activities would include the seeding of disturbed areas with appropriate BLM-approved seed mixes (Table 2.3-7). The seed mix would include both native and non-native species that have been successfully used in reclaiming disturbed areas in the past. Vegetation would consist mostly of grasses in the short term. Native shrubs, as well as pinyon pine and juniper, would increase with time but it may take 15 to 30 years for sagebrush to mature (BLM 2004b), and it may take 75 to 100 years for singleleaf pinyon and Utah juniper trees to mature (Barney and Frischknecht 1974). After the project is complete, the fences would be removed and the public would have access to the reclaimed mine area. Approximately 115 acres of pinyon-juniper woodland communities would not be reclaimed, resulting in long-term impacts to Forest Products (Table 4.11-1).

The pinyon-juniper woodlands are common and widespread throughout the area. The reclamation plan (Section 2.3.16) is designed to return disturbed areas to shrub and grassland conditions that are similar to the existing dominant vegetation community structure of sagebrush shrubland and steppe with lesser amounts of cold desert scrub and pinyon-juniper woodland. The primary revegetation effort would emphasize re-establishment of the native species which eventually would include pinyon-juniper woodland.

### **Fuels**

Impacts to fuels during operations, maintenance, and reclamation would be long term. Fuel loading would be reduced during the operations and permanent impacts to fuel resources would consist of the removal of approximately 115 acres of pinyon-juniper woodland.



#### **4.11.4 Northern Power Line Route Alternative**

The Northern Power Line Route Alternative would result in similar types, intensity and duration of impacts on forest products as described under the Proposed Action, except that this alternative would result in approximately 17 fewer acres of short-term impacts to pinyon-juniper woodlands compared to the Proposed Action (Table 4.11-1).

The impacts to fuels under this Alternative would be 47 tons less than the Proposed Action (Table 4.11-3).

#### **4.11.5 Southern Power Line Alternative**

The Southern Power Line Route Alternative would result in similar types, intensity, and duration of impacts on forest products as described under the Proposed Action, except that this alternative would result in approximately 20 fewer acres of short-term disturbance to pinyon-juniper woodland compared to the Proposed Action (Table 4.11-1).

The impacts to fuels under this Alternative would be 57 acres less than the Proposed Action (Table 4.11-3).

#### **4.11.6 Northwest Main Access Route Alternative, Northern Power Line Route**

The Northwest Main Access Route Alternative, Northern Power Line would result in similar types, intensity and duration of impacts on forest products as described under the Proposed Action, except that under this alternative surface disturbance would result in approximately one additional acre of short-term impacts to pinyon-juniper woodlands compared to the Proposed Action (Table 4.11-1).

Under this alternative, approximately 3.5 tons more of fuel resources would be impacted by surface disturbance as compared to the Proposed Action (Table 4.11-3).

#### **4.11.7 Northwest Main Access Route Alternative, Southern Power Line Route**

The Northwest Main Access Route Alternative, Southern Power Line Route would result in similar types, intensity and duration of impacts on forest products as described under the Proposed Action, except that under this alternative, surface disturbance would result in approximately seven fewer acres of short-term impacts to pinyon-juniper woodlands compared to the Proposed Action (Table 4.11-1).

Under this alternative, approximately 18 fewer tons of fuel resources would be impacted than the Proposed Action, as shown in Table 4.11-3.

#### **4.11.8 Modified County Road Re-Route Alternative**

The Modified County Road Re-Route Alternative would result in similar types, intensity, and duration of impacts on forest products as described under the Proposed Action.

The impacts to fuels under this alternative would be similar in type, intensity and duration as those described under the Proposed Action.



### **4.11.9 Western Tailings Storage Facility Alternative**

The Western Tailings Storage Facility Alternative would result in similar types, intensity and duration of impacts on forest products as described under the Proposed Action, except that under this alternative fencing would result in approximately 1,179 fewer acres of short-term impacts to pinyon-juniper woodlands compared to the Proposed Action (Table 4.11-1).

The impacts to fuels under this alternative would be similar in type, intensity and duration to the Proposed Action but would be 233 tons less as shown in Table 4.11-3.

### **4.11.10 No Action Alternative**

Under the No Action Alternative, the Proposed Action would not be constructed and there would be no associated project impacts on forest products and fuel resources excluding the authorized exploration activities. Impacts of the authorized exploration activities were described in the EA for those activities (BLM 2012h).

### **4.11.11 Additional Monitoring and Mitigation**

No additional monitoring measures required for forest products or fuels. No mitigation measures are required for forest products or fuels.

## **4.12 WILD HORSES**

This section describes the effects of the Proposed Action and alternatives on wild horses. Figure 3.12-1 shows the Pancake HMA and WHT in the analysis area, which is defined in Section 4.12.1. For any of the alternatives, the proposed facilities would be constructed entirely within the Pancake HMA. A short segment of the existing main access route crosses the northwestern corner of the Monte Cristo WHT. Impacts to related resources water, vegetation, and air are presented in other sections of this EIS.

### **4.12.1 Analysis Areas**

The analysis area for all action alternatives is:

- the Plan area and second water supply well and infrastructure (including a 150-foot by 150-foot pad, a 0.5-mile-long, 12-foot-wide two-track road, and a 0.5-mile-long power line with a 100-foot pole spacing and a 50-foot-radius circle of disturbance for each pole to allow for monopoles or two pole structures); for impact analysis purposes, specialists assumed that the proposed second well would be installed 0.5-mile south of the existing Easy Junior water supply well;
- A 200-foot-wide corridor along the Proposed Action power line corridor to account for varying field conditions and allow flexibility during final siting of the line (Figure 1.1-2);
- Corridors along segments of the existing and new road on the proposed county road re-route to account for disturbance if, in the future, White Pine County decides to widen the road; 30-foot-wide corridors to meet BLM “resource road” standards were used for analysis purposes (Figure 1.1-2); In the future, if White Pine County decides to widen the road, the segments of existing and new road on the proposed county road re-route;
- the main access route (Figure 1.1-2); and



- Other existing roads that lead to the Plan area (Figure 1.1-2; Routes B, D, and E, Figure 4.8-1).

The analysis area for the No Action Alternative is the approved, amended 2011 Exploration Plan area.

#### **4.12.2 Indicators**

Indicators used to assess potential impacts to wild horses include the following:

- Number of vehicle / wild horses collisions.
- Acres of habitat available within HMA to be affected by the proposed project.
- Groundwater elevations, location, number, origin of water sources available and use by wild horses, risk of releases.

#### **4.12.3 Proposed Action**

##### **Construction**

Potential impacts to wild horses within the Pancake HMA from the Proposed Action could include reduction in forage, displacement, and potential for collisions with vehicles. The proposed project-related ground disturbances would be limited to the Pancake HMA (Figure 3.12-1). A portion of Green Springs Road along the existing main access route is located in the northwest corner of the Monte Cristo WHT, but no surface disturbance is proposed along this route.

Surface disturbance would result in short-term loss of forage habitat until reclamation is completed. The 8,757-acre mine area would be fenced, restricting access to forage resources and displacing wild horses from this area. Outside the fence line, entrance facility construction (14 acres), road construction or widening (up to 29 acres), power line and maintenance road construction (51 acres) and infrastructure construction related to the second water supply well (6 acres) would result in up to 100 additional acres of disturbance to forage resources. Proposed disturbance in defined locations would total approximately, 8,860 acres. In addition, approximately 400 acres within the Plan area would be disturbed for exploration during the construction and operation of the mine. The exact location of this disturbance is unknown at this time but represents an additional 4 percent of the total area impacted. In total approximately 9,260 acres of wild horse forage resources, or approximately 1 percent of the Pancake HMA, could be impacted.

Impacts from mine blasting in the mine area or along the Proposed Action power line route, equipment operation, and increased human presence in the Plan area could also temporarily displace wild horses. The location of project components such as the existing main access route and proposed fencing of the mine area could intersect with daily movement routes between foraging areas. Impact to water resources is described in Section 4.2.

Approximately 491 acres of surface disturbance would not be reclaimed, including the 367-acre pit, resulting in long-term impacts to wild horse forage resources. Excavation of the pit would result in a permanent loss of 367 acres of wild horse habitat. This long-term disturbance would make up less than 1 percent of the 855,000-acre Pancake HMA. Wild horses associated with the Pancake HMA would likely use forage throughout the remainder of the HMA.



## **Operations, Maintenance, and Reclamation**

Mining operations would displace wild horses into adjacent areas. It is anticipated that managing wild horses within the AML would minimize the potential for direct conflicts between mine activities and wild horses within the analysis area. The Applicant-Committed EPMs outlined in Table 2.3-8 would be implemented to help minimize mortality to wild horses due to potential vehicular collisions.

If the TSF were to fail, impacts could include short-term or long-term changes to resources. The intensity and extent of the effects would depend on the size of the failure. Short-term or long-term loss or reduction in productivity of forage resources for wild horses could occur.

### ***4.12.4 Northern Power Line Route Alternative***

The Northern Power Line Route Alternative would result in similar types, intensity and duration of impacts to wild horses as described under the Proposed Action, except that under this alternative approximately 33 fewer acres of short-term impacts would occur during construction of the power line and associated maintenance road.

### ***4.12.5 Southern Power Line Route Alternative***

The Southern Power Line Route Alternative would result in similar types, intensity and duration of impacts to wild horses as described under the Proposed Action, except that approximately 34 fewer acres of short-term impacts would occur during construction of the power line and associated maintenance road.

### ***4.12.6 Northwest Main Access Route Alternative, Northern Power Line Route***

The Northwest Main Access Route Alternative would result in similar types, intensity and duration of impacts to wild horses as those described under the Proposed Action. Power line pole installation would result in 13 acres of short-term disturbance, compared to 35 acres under the Proposed Action.

Construction of this alternative main access route would result in approximately 10 acres of short-term surface disturbance related to obtaining gravel from two 5-acre pits located along the route. These areas would be reclaimed after completion of road construction.

Several segments of existing roads that already support commercial truck traffic would make up part of the alternative main access route. Other segments of the route would be constructed or widened. Short-term surface disturbance would include approximately 92 acres of road construction and widening along this alternative main access route. In comparison, the Proposed Action main access route was upgraded several years ago, and no new surface disturbance would be required during road maintenance activities.

Overall, 64 greater acres of short-term surface disturbance would occur under this alternative compared to the Proposed Action. Long-term impacts would be similar to those described under the Proposed Action.

### ***4.12.7 Northwest Main Access Route Alternative, Southern Power Line Route***

The Northwest Main Access Route Alternative, Southern Power Line Route would result in similar types, intensity and duration of impacts to wild horses as those described under the Proposed Action. Power line pole installation would result in 14 acres of short-term disturbance, compared to 35 acres under the Proposed Action. Construction of this alternative main access



route would result in approximately 10 acres of short-term surface disturbance related to obtaining gravel from two 5-acre pits located along the route. These areas would be reclaimed after completion of road construction.

Several segments of existing roads that already support commercial truck traffic would make up part of the alternative main access route. Other segments of the route would be constructed or widened. Short-term surface disturbance would include approximately 99 acres of road construction and widening along this alternative main access route. In comparison, the Proposed Action main access route was upgraded several years ago, and no new surface disturbance would be required during road maintenance activities.

Overall, 72 greater acres of short-term surface disturbance would occur under this alternative compared to the Proposed Action. Long-term impacts would be similar to those described under the Proposed Action.

#### ***4.12.8 Modified County Road Re-Route Alternative***

The Northwest Main Access Route Alternative, Southern Power Line Route would result in similar types, intensity and duration of impacts to wild horses as those described under the Proposed Action. Relative to the Proposed Action, the county road re-route under this alternative would be approximately 1 mile longer and use different road segments (Figure 2.4-3). Overall, this alternative could result in 1 less acre of long-term disturbance compared to the Proposed Action.

#### ***4.12.9 Western Tailings Storage Facility Alternative***

The Northwest Main Access Route Alternative, Southern Power Line Route would result in similar types, intensity and duration of impacts to wild horses as those described under the Proposed Action. Under this alternative, the fenced mine area would be smaller, and approximately 1,708 fewer acres of wild horse habitat would be impacted. A long-term loss of 453 acres of rangeland would result from the Western Tailings Storage Facility Alternative compared to a loss of 491 acres under the Proposed Action.

#### ***4.12.10 No Action Alternative***

Under the No Action Alternative, the Proposed Action would not be constructed and there would be no project-related impacts to wild horse habitat. OHV usage trends within the Pancake HMA and the Monte Cristo WHT would continue under the No Action Alternative. Wild horse habitat disturbances would continue similar to current conditions, including previously authorized exploration activities as described in Section 2.2. Wild horses currently in the analysis area would continue to use these areas.

#### ***4.12.11 Additional Monitoring and Mitigation***

No additional monitoring measures are required. No mitigation measures are required.

### **4.13 CULTURAL RESOURCES**

Under the current statutes and regulations including but not limited to the National Historic Preservation Act (NHPA) of 1966 (16 U.S.C. 470-470t), the National Environmental Policy Act (NEPA) of 1969 (40 U.S.C. 1500-17.7; 42 U.S.C. 4321-61) and their implementing regulations (36 CFR 61; 36 CFR 65; 36 CFR 800; 36 CFR 801; 36 CFR 805; 43 CFR 1500-1508), federal



agencies must consider the effects of federal actions on cultural and traditional resources. Federal actions include activities on federal land, federally funded activities, and activities permitted or sanctioned by federal agencies. Many states also have their own legislation to protect cultural and traditional sites. Cultural resource inventories, including background research and field surveys are required to identify these resources or to update documentation before federal actions are approved.

Section 106 of the NHPA requires that federal agencies take into account the effects of federal undertakings to historic properties. ARPA forbids damage to or removal of cultural resources or objects of patrimony located on federal lands without a valid permit and specifies penalties for such actions. A finding of adverse effect to historic properties under Section 106 would be considered a significant impact under NEPA. Cultural resources are non-renewable resources, and any adverse impact would be permanent.

### **4.13.1 Analysis Areas**

#### **Area of Potential Effect**

In assessing direct effects, the APE includes the Gold Rock Project APE, which is defined in the Programmatic Agreement (BLM 2014a) as the lands proposed for surface disturbance for mining operations and the construction of a transmission line associated with the Proposed Action and alternatives and as described in Section 2.3 and shown on Figure 2.3-1. The Exploration APE for the Gold Rock Project encompasses a larger geographic area where Midway may conduct mineral exploration to identify additional ore bodies and is illustrated by the Plan boundary on Figure 1.1-2.

#### **Proposed Action**

The Gold Rock Project APE includes:

- The Plan area;
- a 150-foot by 150-foot pad for the second water supply well plus a 100-foot buffer; a 0.5-mile-long, 12-foot-wide two-track road to the second water supply well plus a 100-foot buffer on each side of the center line; and a 0.5-mile-long power line to the second water supply well plus a 100-foot buffer on each side of the center line; for impact analysis purposes, specialists assumed that the proposed second well would be installed 0.5-mile south of the existing Easy Junior water supply well;
- The Proposed Action power line route plus a 100-foot buffer on each side of the center line; and
- Segments of the existing and new road on the proposed county road re-route plus a 100-foot buffer on each side of the center line to account for disturbance if, in the future, White Pine County decides to widen the road.

#### **Northern Power Line Route Alternative**

The APE is similar to the Proposed Action APE, with one modification:

- Inclusion of the Northern Power Line Route Alternative plus a 100-foot buffer on each side of the center line, instead of the Proposed Action power line route and buffer.



### **Southern Power Line Route Alternative**

The APE is similar to the Proposed Action APE with one modification:

- Inclusion of the Southern Power Line Route Alternative plus a 100-foot buffer on each side of the center line, instead of the Proposed Action power line route and buffer.

### **Northwest Main Access Route Alternative, Northern Power Line Route**

The APE is similar to the Proposed Action APE, with two modifications:

- Inclusion of the Northern Power Line Route Alternative instead of the Proposed Action power line route and buffer.
- Addition of the Northwestern Main Access Route Alternative, Northern Power Line Route, plus a 100-foot buffer on each side of the center line (Figure 2.4-2).

### **Northwest Main Access Route Alternative, Southern Power Line Route**

The APE is similar to the Proposed Action APE, with two modifications:

- Inclusion of the Southern Power Line Route alternative instead of the Proposed Action power line route and buffer.
- Addition of the Northwestern Main Access Route Alternative, Southern Power Line Route, plus a 100-foot buffer on each side of the center line (Figure 2.4-2).

### **Modified County Road Re-Route Alternative**

The APE is similar to the Proposed Action APE, with one modification:

- Inclusion of an existing segment of BLM 4059 from BLM 4006/CR 1180 to the proposed county road re-route plus a 100-foot buffer on each side of the center line, instead of the new road segment and unmarked BLM road segment and buffer (Figure 2.4-2).

### **Western Tailings Storage Facility Alternative**

The APE is the same as the Proposed Action APE.

### **No Action Alternative**

The APE is the approved, amended 2011 Exploration Plan area.

### **Analysis Area**

The analysis area for establishing historic contexts and the nature of known resources in and around the project area includes the direct disturbance area plus one mile outward in all directions from the perimeter of both the Project and Exploration APEs. The APE for indirect effects may extend beyond the APE for direct effects to encompass properties that have traditional religious and cultural importance to Indian tribes or other historic properties such as trails or roads that are important in part for their historic setting. These resources may be sensitive to visual or auditory impacts that affect the historic setting or traditional or religious values. Visual or auditory intrusion may affect historic properties or traditional and religious values that are farther from the project.



**Proposed Action**

- The analysis area includes the Plan area, proposed second well, Proposed Action power line, and proposed county road re-route plus a one-mile buffer (Figure 1.1-2).

**Northern Power Line Route Alternative**

- The analysis area is similar to the Proposed Action, with one modification:
- Inclusion of the Northern Power Line Route plus a one-mile buffer, instead of the Proposed Action power line plus a one-mile buffer (Figure 2.4-1).

**Southern Power Line Route Alternative**

- The analysis area is similar to the Proposed Action, with one modification:
- Inclusion of the Southern Power Line Route plus a one-mile buffer, instead of the Proposed Action power line plus a one-mile buffer (Figure 2.4-1).

**Northwest Main Access Route Alternative, Northern Power Line Route**

- The analysis area is similar to the Proposed Action, with one modification:

Inclusion of the Northwest Main Access Route, Northern Power Line Route plus a one-mile buffer (Figure 2.4-2).

**Northwest Main Access Route Alternative, Southern Power Line Route**

- The analysis area is similar to the Proposed Action, with one modification:

Inclusion of the Northwest Main Access Route, Southern Power Line plus a one-mile buffer (Figure 2.4-2).

**Modified County Road Re-Route Alternative**

- The analysis area is similar to the Proposed Action, with one modification:
- Inclusion of the Modified County Road Re-Route plus a one-mile buffer, instead of the proposed county road re-route plus a one-mile buffer (Figure 2.4-3).

**Western Tailings Storage Facility Alternative**

- The analysis area is the same as for the Proposed Action.

**4.13.2 Indicators**

- Presence of identified historic properties (cultural resources listed on or eligible for the National Register of Historic Places) in the Plan area that could be disturbed.
- Potential presence of unanticipated discoveries (undocumented cultural resources or human remains).

**4.13.3 Proposed Action**

Thirty-nine historic properties have been identified within the APE of direct effect of proposed construction or project features. Twenty-two of the 39 historic properties that could potentially be



affected are prehistoric cultural resources. Seventeen of the 39 historic properties that could potentially be affected are historic cultural resources. As defined in Section 3.13, cultural resources that are listed on or eligible for the NRHP are historic properties. Cultural resources that are unevaluated are potentially eligible for the NRHP and are also considered historic properties. These historic properties could be degraded or destroyed by proposed construction, exploration or operation of the project. Under the terms of the PA between BLM and SHPO (2014), any amendments or modifications to the Proposed Action and any future exploration would be surveyed by qualified archaeologists following BLM Class III Standards. During operation, indirect impacts could also occur to historic properties that have been avoided. These indirect impacts could include vandalism made possible by increased traffic in the vicinity of the historic property or inadvertent damage to unidentified portions of the sites. Avoidance and protection measures for historic properties developed before construction would be maintained and monitored to protect these resources.

Some historic properties may also be considered eligible as Traditional Cultural Properties (TCPs). If the historic property is also a TCP, Native American religious and traditional values must also be considered (Section 4.14). In addition, an unanticipated discovery plan consistent with Stipulation X of the PA would be developed outlining the procedures in the event that an undocumented cultural resource or human remains are encountered during construction.

If the TSF were to fail, impacts could include short-term or long-term changes to resources. The intensity and extent of the effects would depend on the size of the failure. Loss, disturbance or damage to NRHP-eligible cultural resources could occur.

#### ***4.13.4 Northern Power Line Route Alternative***

A cultural survey was performed within the corridor, and several sites were found. These sites would be avoided.

#### ***4.13.5 Southern Power Line Route Alternative***

A cultural survey was performed within the corridor, and several sites were found. These sites would be avoided.

#### ***4.13.6 Northwest Main Access Route Alternative, Northern Power Line Route***

A cultural survey was performed within the corridor, and several sites were found. These sites would be avoided.

#### ***4.13.7 Northwest Main Access Route Alternative, Southern Power Line Route***

A cultural survey was performed within the corridor, and several sites were found. These sites would be avoided.

#### ***4.13.8 Modified County Road Re-Route Alternative***

If this alternative is selected, existing roads would be used and Midway does not propose any disturbance. In the future, if White Pine County would decide to widen this re-route, then additional disturbance could occur. At this time, no additional historic properties have been identified within the areas of proposed disturbance for the Modified County Road Re-Route Alternative in comparison to the Proposed Action, and no cultural inventory has been completed for the entire Modified County Road Re-Route Alternative. If White Pine County decides to



widen the road, the area would be surveyed by qualified archaeologists following BLM Class III Standards in accordance with the Programmatic Agreement (Appendix 1A). The results of the additional inventory would undergo standard Section 106 review.

#### ***4.13.9 Western Tailings Storage Facility Alternative***

The Western Tailings Storage Facility Alternative would involve siting a tailings storage facility in the western part of the Plan area in comparison to the Proposed Action TSF location. The proposed footprint of disturbance for this TSF may affect one additional historic property not affected by the Proposed Action. This site is a small, unevaluated prehistoric lithic scatter.

#### ***4.13.10 No Action Alternative***

There would be no new federal undertaking under this alternative.

#### ***4.13.11 Additional Monitoring and Mitigation***

No additional monitoring measures are required. Mitigation measures are designed to avoid or lessen destruction or degradation of historic properties or aspects of the historic setting that contribute to the eligibility of historic properties. The preferred mitigation is avoidance of adverse effect and protection of the historic properties from subsequent impacts including inadvertent damage.

If a historic property cannot be avoided, an alternative mitigation plan would be developed and implemented. For historic properties that are eligible for their potential to yield important information (Criterion D), data recovery is the typical mitigation measure.

The majority of prehistoric sites are eligible under Criterion D. Data recovery for prehistoric sites may include detailed documentation, collection and curation of surface artifacts, or recovery of buried artifacts and features through systematic excavation. Some of the prehistoric sites may also be considered eligible as TCPs. Aspects of the natural and historic setting may also contribute to the eligibility of TCPs.

Mitigation would be performed in accordance with the Programmatic Agreement (Appendix 1A), which outlines the methods of identification and treatment of cultural resources. If unanticipated TCPs are identified, protective and mitigation measures may need to be developed for TCPs in consultation with concerned Native American groups.

### **4.14 NATIVE AMERICAN RELIGIOUS AND TRADITIONAL VALUES**

Issues of general religious and traditional value that have been identified by Native American Tribes in consultation with BLM include sage-grouse, sage-grouse leks, pinyon nut gathering areas, and traditional antelope traps. In addition to direct damage to these religious or traditional values, adverse effects may also include impairment of access to these religious and traditional values. Potential impacts to sage-grouse are addressed in Section 4.9. Potential impacts to pinyon are addressed in Section 4.11. The BLM will consult with concerned tribes regarding the findings of this analysis, will consider tribal concerns, and will strive to work cooperatively with the tribes. Antelope traps have been identified during cultural resources surveys and may also be considered TCPs.



#### **4.14.1 Analysis Areas**

The analysis areas are the same areas used for cultural resources (Section 4.13).

#### **4.14.2 Indicators**

- Presence of sage-grouse populations and sage-grouse lek sites that could be disturbed.
- Presence of pinyon, including traditional gathering areas, and the potential disruption of traditional pinyon gathering.
- Presence of traditional antelope traps that could be disturbed.

#### **4.14.3 Proposed Action**

No specific issues of concern, TCPs, or sacred sites have been identified for the project during consultation. The distribution and potential effects to sage-grouse are described in Sections 3.9 and 4.9. The distribution and potential effects to pinyon are addressed in Sections 3.11 and 4.11. The BLM will consult with the tribes regarding these effects and strive to resolve conflicts and identify mitigation measures to reduce or eliminate any adverse effects.

Two traditional antelope traps that are recommended eligible as prehistoric resources were identified within the APE of the Proposed Action. These historic properties may be altered or destroyed. These historic properties could also be TCPs, but have not been identified as such. Because effects to traditional antelope traps have been identified as an issue by the tribes, the BLM will consult with the tribes concerning evaluation and treatment of these historic properties. If additional Native American religious and traditional values or specific Native American concerns are identified in the course of ongoing consultation, the BLM will consult with the appropriate Tribes and individuals to obtain information and discuss appropriate mitigation measures.

#### **4.14.4 Northern Power Line Route Alternative**

This alternative differs from the Proposed Action only in the location of the corridor for the external power line route. No potential adverse effects to Native American religious and traditional values have been identified for the Proposed Action or for this alternative.

#### **4.14.5 Southern Power Line Route Alternative**

This alternative differs from the Proposed Action only in the location of the corridor for the external power line route. No potential adverse effects to Native American religious and traditional values have been identified for the Proposed Action or for this alternative.

#### **4.14.6 Northwest Main Access Route Alternative, Northern Power Line Route**

This alternative differs from the Proposed Action only in the construction of new road segments and widening of existing road segments to establish an alternative main access route corridor (Figure 2.4-2), rather than using the existing main access route. No potential adverse effects to Native American religious and traditional values have been identified for the Proposed Action or for this alternative.



#### ***4.14.7 Northwest Main Access Route Alternative, Southern Power Line Route***

This alternative differs from the Proposed Action only in the construction of new road segments and widening of existing road segments to establish an alternative main access route corridor (Figure 2.4-2), rather than using the existing main access route. No potential adverse effects to Native American religious and traditional values have been identified for the Proposed Action or for this alternative.

#### ***4.14.8 Modified County Road Re-Route Alternative***

This alternative differs from the Proposed Action in the use of only existing road segments rather than using a combination of existing and new road segments for the proposed county road re-route (Figure 2.4-2). No potential adverse effects to Native American religious and traditional values have been identified for the Proposed Action or for this alternative.

#### ***4.14.9 Western Tailings Storage Facility Alternative***

The Western Tailings Storage Facility Alternative would involve siting a tailings storage facility in the western part of the Plan area in comparison to the Proposed Action TSF location. No potential adverse effects to Native American religious and traditional values have been identified for the Proposed Action or for this alternative.

#### ***4.14.10 No Action Alternative***

Under the No Action Alternative, the mine, associated facilities and associated infrastructure would not be constructed and operated. There would be no adverse impacts to Native American religious and traditional values resulting from this undertaking.

#### ***4.14.11 Additional Monitoring and Mitigation***

No additional monitoring is required. The three resources that have been identified by the tribes as potential Native American religious and traditional values, sage-grouse, pinyon, and antelope traps are also natural and cultural resources that are addressed in their respective sections. Mitigation measures would include avoidance and protection that would limit or minimize direct adverse effects to these resources.

Traditional values also need to be considered. In addition to developing mitigation measures to protect sage-grouse and pinyon, the BLM would consult with the Tribes. The BLM may need to assure tribal access to these resources during critical periods of the year, within safety standards and reasonable operational limitations. Antelope traps may be locations of veneration for tribal traditions and may also still be in use for traditional hunts. In addition to avoidance and physical protection of these traditional features, measures may need to be developed to protect the natural setting of the traps, assure that antelope can still freely access the vicinity and allow tribal access and use, as appropriate.

### **4.15 LAND USE AUTHORIZATION AND ACCESS**

Potential impacts to land use authorization and access include impacts to land uses such as grazing, mineral exploration, recreation. Impacts can also include an increased risk to public health and safety, primarily from increased traffic or risk of exposure to hazardous materials in the event of a release or spill during transport. Impacts to BLM grazing allotments are analyzed



in Section 4.10, Range Resources. Impacts to recreation are described in Section 4.17, Recreation. Impacts associated with transport of hazardous materials and wastes are analyzed in Section 4.20. Under any of the alternatives, access to the Duckwater Shoshone Reservation would be similar to current conditions.

#### **4.15.1 Analysis Areas**

The analysis areas are the same areas used for Wild Horses (Section 4.12).

#### **4.15.2 Indicators**

Indicators used to assess potential impacts to land use authorization and access include the following:

- Number of vehicles or number of average daily trips, proposed number and frequency of vehicles transporting hazardous materials to the mine.

#### **4.15.3 Proposed Action**

Under the Proposed Action Midway would obtain all required land use authorizations and permits as described in Section 1.9 and would comply with the applicable land use plans, zoning ordinances and policies of potentially affected governmental entities, including White Pine and Eureka Counties.

#### **Construction**

Under the Proposed Action, approximately 6 acres of vegetation could be impacted during construction of the proposed second well and associated power line and maintenance road. Approximately 7 acres of vegetation would be removed during construction of the proposed county road re-route, and an additional 22 acres may be removed if White Pine County decides to widen the road, for a total potential disturbance of 29 acres. Approximately 51 acres of vegetation would be removed for the proposed power poles and associated maintenance road.

Existing roads (Figure 1.1-2) would be used as the main access route for commercial truck traffic and employees. The main access route leads from US 50 south on Green Springs Road, west onto BLM 1179/ CR 1204, and south on Easy Junior Road to the Plan area (Route A, Figure 4.8-1).

The average number of people employed during construction would be approximately 250, with a peak of about 300. Employees would commute to the mine from Ely or Eureka via US 50. Busses or vans may be used to shuttle employees from Ely and/or Eureka to the mine site (Table 4.8-2). Under the Proposed Action, all workers, contractors, vendors, and visitors would be directed to use the existing main access route (Route A, Figure 4.8-1); however, a worker, contractor, vendor, or visitor may choose to use other roads that lead to the Plan area as shown on Figure 4.8-1.

Existing, baseline traffic use on the public roads in the area is not available. Estimated road use related to the Proposed Action is described in section 4.8 and summarized in Table 4.8-2. The specific locations of the proposed exploration activities are not yet defined; therefore, site-specific estimates of increases in vehicular traffic and the associated potential risks of accidents on the public roads related to exploration activities in the analysis area are not quantifiable at this time.



Bulk chemicals and supplies would typically be transported to the site by trucks via US 50 and the existing main access route from either the east (Ely) or west (Eureka) and the major connecting highways including Interstate 80 (I-80), US 93, and SR 278. Table 2.3-5 describes the number of expected shipments for reagents to the site. No road use data on these roads are available; however, minimal traffic (Table 3.15-1) is known to use these roads at present. Observations over time by various BLM staff indicate that these roads are used occasionally by local residents or recreationists.

To analyze the potential effects of increased traffic on these roads, the BLM estimated use that could result from the Proposed Action and alternatives. Table 4.8-2 shows these estimates, which are based on the number of employees anticipated during construction and operation, the number of deliveries anticipated during operations as presented in Table 2.3-5 (Fuels, Reagents, Volumes, and Shipments), and information being gathered during construction of the nearby Pan Mine.

Increased traffic on public roads in the vicinity of the project would result in a proportionate increase in the risk of traffic accidents, noise and air emissions from project-related vehicles and equipment, and fugitive dust from road use. Midway would control fugitive dust emissions from roads using water or chemical dust suppressant application where appropriate. Impacts to public health and safety associated with the noise, vehicle emissions, and fugitive dust are analyzed in Section 4.7, Air Quality.

During the construction period, additional vehicles and equipment traveling on public roads may result in a proportionate increase in the rate of road degradation. The BLM FLPMA Title V road right-of-way grant stipulations and road use agreements with White Pine and Nye Counties would allow Midway to perform road maintenance and snow removal on roads that lead to the Plan area.

Based on BLM traffic estimates (Table 3.15-1), the Proposed Action is anticipated to result in a minimal increase in AADT during the construction period; however, the increased vehicular traffic could be noticeable on some county or BLM roads. Disruptions to local traffic circulation would be short term because delays to public travel would typically be no more than 15 or 20 minutes in duration. The effects to public transportation would be of low intensity, temporary in duration, and primarily limited to the immediate areas near the Plan area.

With implementation of the Applicant-Committed EPMs described in Table 2.3-8, the risk of accidents on public roads would be similar to current conditions and an accident resulting in a release to the environment is not anticipated.

No impacts to existing ROWs or areas with special designations are anticipated under the Proposed Action.

Most oil and gas leases established within the analysis area are either in areas outside the fenced mine boundary or in areas associated with roads or power lines. No impacts to the availability of these leased minerals would occur. Leases in Township 15N, Range 56E Sections 4, 9, 10, 15, and 16 are within the fenced mine area and partially overlap with proposed mine features. Surface access to these leases would be impacted under the Proposed Action, as would access to the subsurface leased minerals unless directional drill methods are employed from outside the mine facilities. These leases expire in 2021.

Implementation of the Proposed Action would have impacts on the accessibility of oil and gas minerals on those leases during the lease period. No geothermal nominations have been established within the analysis area; therefore, there would be no effects to the accessibility of



geothermal resources. Implementation of the Proposed Action would not adversely affect any existing mine leases within the analysis area.

### **Operations, Maintenance and Reclamation**

Under the Proposed Action, impacts during operations, maintenance and reclamation would be similar to those described for construction.

Mine-related heavy truck use during operations reflects the number of anticipated delivery trucks per month indicated in Table 2.3-5, assuming 30 days in one month, plus one more truck per 7-day week. This information was used to calculate average daily use on routes leading from US 50 and Duckwater Road to the Plan area, and is summarized in Table 4.8-2. For safety purposes during operations, public access to active mining areas would be restricted and traffic control measures would be implemented to minimize impacts to public travel, including posting speed limit signs on mine access routes and on other roads throughout the project area and enforcing speed limits.

If the TSF were to fail, impacts could include short-term or long-term changes to resources. The intensity and extent of the effects would depend on the size of the failure. Short-term or long-term loss of access to public lands or mineral resources could occur.

Reclamation activities associated with roads are described in Section 2.3.16. As determined by BLM, roads on public lands that are suitable for public access or that continue to provide public access consistent with pre-mining conditions would not be reclaimed at closure. Roads without a defined post-mining use would be reclaimed when they are no longer needed. The proposed reclamation activities and post-mining land uses are designed to be in conformance with the Ely District Approved Resource Management Plan (BLM 2008b) and White Pine County zoning ordinances. The main route consists of BLM and county roads, and would not be reclaimed.

With implementation of the Applicant-Committed EPMs described in Table 2.3-8, the risk of accidents on public roads would be similar to current conditions.

#### ***4.15.4 Northern Power Line Route Alternative***

Construction, operation, maintenance and reclamation under this alternative would result in similar types, intensities, and duration of impacts as those described for the Proposed Action. This alternative would include a 3.6-mile long power line (7.1 miles shorter than the Proposed Action power line). Approximately 33 fewer acres of short-term disturbance to BLM-administered public land would occur due to the shorter the length of the power line. Long-term impacts would be similar to those described under the Proposed Action.

No additional mining claims, oil and gas leases, or geothermal nominations would be affected.

#### ***4.15.5 Southern Power Line Route Alternative***

Construction, operation, maintenance and reclamation under this alternative would result in similar types, intensities, and duration of impacts as those described for the Proposed Action. This alternative would include installation of a 4-mile long power line (6.7 miles shorter than the Proposed Action power line). Approximately 34 fewer acres of short-term disturbance to BLM-administered public land would occur, due to the shorter length of the power line. Long-term impacts would be similar to those described under the Proposed Action.



The oil and gas leases present in Township 15N, Range 55E, Sections 2, 11, and 12 would not be adversely affected by the construction or operation of the power line or associated maintenance road under this alternative.

#### ***4.15.6 Northwest Main Access Route Alternative, Northern Power Line Route***

Construction, operation, maintenance and reclamation under this alternative would result in similar types, intensities, and duration of impacts as those described for the Proposed Action. Power line pole installation would result in 13 acres of short-term disturbance, compared to 35 acres under the Proposed Action.

Construction of this alternative main access route would result in approximately 10 acres of short-term surface disturbance related to obtaining gravel from two 5-acre pits located along the route. These areas would be reclaimed after completion of road construction.

Several segments of existing roads that already support commercial truck traffic would make up part of the alternative main access route. Other segments of the route would be constructed or widened. Short-term surface disturbance would include approximately 92 acres of road construction and widening along this alternative main access route. In comparison, the Proposed Action main access route was upgraded several years ago, and no new surface disturbance would be required during road maintenance activities.

Overall, 64 greater acres of short-term surface disturbance would occur under this alternative compared to the Proposed Action. Long-term impacts would be similar to those described under the Proposed Action.

With implementation of the Applicant-Committed EPMs described in Table 2.3-8, the risk of accidents on public roads would be similar to current conditions.

No additional mining claims, oil and gas leases, or geothermal nominations would be affected.

#### ***4.15.7 Northwest Main Access Route Alternative, Southern Power Line Route***

Construction, operation, maintenance and reclamation under this alternative would result in similar types, intensities, and duration of impacts as those described for the Proposed Action. Power line pole installation would result in 14 acres of short-term disturbance, compared to 35 acres under the Proposed Action.

Construction of this alternative main access route would result in approximately 10 acres of short-term surface disturbance related to obtaining gravel from two 5-acre pits located along the route. These areas would be reclaimed after completion of road construction.

Several segments of existing roads that already support commercial truck traffic would make up part of the alternative main access route. Other segments of the route would be constructed or widened. Short-term surface disturbance would include approximately 99 acres of road construction and widening along this alternative main access route. In comparison, the Proposed Action main access route was upgraded several years ago, and no new surface disturbance would be required during road maintenance activities.

Overall, 72 greater acres of short-term surface disturbance would occur under this alternative compared to the Proposed Action. Long-term impacts would be similar to those described under the Proposed Action.



With implementation of the Applicant-Committed EPMs described in Table 2.3-8, the risk of accidents on public roads would be similar to current conditions.

No additional mining claims, oil and gas leases, or geothermal nominations would be affected.

#### ***4.15.8 Modified County Road Re-Route Alternative***

Construction, operation, maintenance and reclamation under this alternative would result in similar types, intensities, and duration of impacts as those described for the Proposed Action. If White Pine County widens the county road re-route, the widening could result in approximately 28 acres of long-term surface disturbance, which is 1 less acre than would occur under the Proposed Action.

No additional mining claims, oil and gas leases, or geothermal nominations would be affected.

#### ***4.15.9 Western Tailings Storage Facility Alternative***

Construction, operation, maintenance and reclamation under this alternative would result in similar types, intensities, and duration of impacts as those described for the Proposed Action. Under this alternative the fenced mine area would enclose 7,049 acres, or approximately 1,708 fewer acres, compared to the Proposed Action fenced mine area. Overall, 118 fewer acres of total surface disturbance would occur under this alternative. The smaller facility footprint would require only 44 acres of stormwater controls to be left unreclaimed, compared to 82 acres under the Proposed Action. As a result, 38 fewer acres of long-term surface disturbance would occur.

No additional mining claims, oil and gas leases, or geothermal nominations would be affected.

#### ***4.15.10 No Action Alternative***

Under the No Action Alternative, the Proposed Action would not be constructed and there would be no associated project impacts and no change in existing land use authorizations. There would be no project-related impacts to land use or access beyond the exploration activities which are already approved as described in Section 2.2. Previously authorized exploration activities would continue and could affect up to 267 acres BLM-administered rangeland within the amended 2011 exploration area (BLM 2012h). Access would continue to be available via several maintained roads as well as smaller jeep trails requiring 4×4 vehicles (BLM 2012h).

#### ***4.15.11 Additional Monitoring and Mitigation***

No additional monitoring is required. No mitigation measures would be required.

### **4.16 VISUAL RESOURCES**

Using the VRM system described in Section 3.16, the analysis for visual resources involves determining whether the potential visual impacts from proposed surface-disturbing activities or actions would meet the management objectives established for the area, or whether design adjustments would be required.

A visual contrast rating process was used for this analysis. The basic design elements of form, line, color, and texture were used to compare the project features with the major features in the existing landscape (BLM 1986b). This analysis was used to identify levels of visual contrast that would be associated with proposed project facilities as viewed from the four KOPs (Figure 3.16-



1). A comparison of the proposed project features that would be visible under each alternative and the existing landscape features was performed for each KOP. Visual contrast rating forms for the four KOPs are included in Appendix 3E.

For three of the four KOPs, computer-generated visual simulations were developed to aid in visualizing the changes that would be imposed on the existing viewshed during the operational phase of each alternative. A computer-generated visual simulation is created by taking a photograph of the existing landscape at a KOP, then modifying the photograph to show the proposed project and its associated changes to the landscape on the photograph. Three visual simulations were created and reviewed to identify the form, line, color, and texture that would characterize the proposed project. This information was compared to the form, line, color, and texture elements of the existing landscape in order to quantify the degree of contrast an alternative would be expected to have. The results of this comparison and expected degree of contrast were applied to determine the potential for each alternative to impact visual resources.

Under any of the action alternatives, there would be some degree of visual change to the analysis area because a few project components and areas cleared of vegetation would be visible from some publically-accessible locations even though these locations are remote and seen by a relatively small number of people. Figure 3.16-1 shows that most of the project components would be located within an area that is managed as VRM Class IV as described in Section 3.16. In VRM Class IV areas, the level of change to the characteristic landscape can be high and management activities may dominate the view and be the major focus of viewer attention (BLM 2008b).

Under any of the action alternatives, artificial lighting for mine facilities would be in compliance with MSHA illumination requirements for worker safety. Light pollution from project facilities could impact visibility of the nighttime sky in the vicinity of the proposed project. Midway would implement the Applicant-Committed EPMs described in Table 2.3-8 to minimize effects night skies. For example, within the fenced mine area, anti-glare light fixtures with fugitive light control designs would be used to limit light pollution. Light fixtures would be placed at the lowest practical height and directed at the ground and/or work areas to avoid being cast skyward or over long distances. Shields and/or louvers would be used on light fixtures and full cut-off type fixtures would be used where possible.

#### **4.16.1 Analysis Areas**

The analysis areas are the same areas used for Wild Horses (Section 4.12).

#### **4.16.2 Indicators**

Indicators used to assess potential impacts to visual resources include the following:

- View from KOPs and visual simulations.

#### **4.16.3 Proposed Action**

Under the Proposed Action, project-related structures and facilities would introduce new elements and visual contrasts compared to the existing landscape character. Mine-related traffic would use the main access route for the life of the mine. The Proposed Action is anticipated to result in up to 354 additional daily trips during construction, and up to 292 additional daily trips during operation as shown in Table 4.8-2 and described in Section 4.8.3.



During the construction period, the presence of workers, vehicles and vehicle lights, heavy equipment, the bustle of activities and associated dust would detract from the visual quality of the landscape in the immediate vicinity of the proposed activities. Although slopes and vegetative screening would likely obscure direct views of project-related activities and facilities, at times vehicle lights and dust raised by vehicle movements would be visible.

During construction, short-term visual impacts from vegetation clearing, grading, and construction of the mine-related facilities would occur. Construction of the power line corridor and maintenance road would result in a new continuous band of moderate to strong contrasting forms, colors, and textures compared to existing conditions.

The project components and facilities would appear as visible alterations to the existing landscape within portions of the analysis area for the life of the project. Visual effects would be localized and the facilities would not be visible in the foreground from US 50 or SR 379 or the Duckwater Shoshone Reservation or other well-traveled, publically accessible viewing areas. Concurrent reclamation during operation of the proposed project would reduce the degree of contrast between the existing landscape features and the proposed project. Buildings would be painted with colors selected from the BLM Standard Environmental Color Chart. The exterior surfaces of any buildings or ancillary facilities visible from any project KOPs would be painted with non-reflective shale green if located in pinyon-juniper vegetation or shadow gray if located in shrublands or other open areas. Other non-reflective carob brown, or as determined by the BLM, may be used in place of shale green or shadow gray. Any structures or facilities within the mined areas would be painted non-reflective colors of paint, as determined by the BLM.

The analysis area is within the GBNHA and a portion of the existing main access route is within the Loneliest Highway SRMA along US 50 (Figure 3.15-1). No road improvements, disturbances or proposed facilities would be constructed within the SRMA. There are no proposed facilities within the analysis area that would visually impact visitors to the SRMA.

If the TSF were to fail, impacts could include short-term or long-term changes to resources. The intensity and extent of the effects would depend on the size of the failure. Visual intrusion into the natural landscape could occur.

During night hours, the Proposed Action would have a substantially different type of impact on visual resources than during day hours. Most of the form, line, color, and texture elements of the proposed project and the existing landscape features would not be visible from the KOPs or elsewhere during the night. However, lights would be used on project equipment and vehicles during night time operations, and stationary lights positioned at various locations within the mine area. Use of project lights would contribute to the illumination of night sky in an area that is largely uninhabited. The night sky over uninhabited, dark areas is optimal for viewing stars and constellations. As illumination of the night sky is increased over an uninhabited and dark area, the number of astral and stellar features that are visible from that area is reduced, and thus the night sky is adversely impacted. Illumination resulting from use of the proposed project lights could have an impact on viewing night sky because there are very few existing light sources in the area and the ambient light level is very low.

The lights associated with proposed project would have a strong contrast against the black backdrop of the night when looking directly at them, as opposed to viewing the sky near them. Because there are very few existing lights sources in the area and the ambient light level is very low, any lights used for the proposed project would be surrounded by an otherwise dark, unlit



background. The brightness of the lights and darkness of the black or nearly black background would create a strong contrast, and thus make the lights readily visible.

In the analysis area, the lights are unlikely to be visible to casual observers traveling on US 50 or Duckwater Road because the highways are more than 15 miles from the proposed project and much of the light would be blocked by topography and vegetation. The haul road berms would likely block the lights of smaller vehicles using haul roads and minimize the visibility of the lights associated with the larger equipment. In the pit and WRDAs, the lights and equipment would be blocked by the pit walls. Implementation of the Applicant-Committed EPMs described in Table 2.3-8 would help to minimize effects to visual resources. For example, disturbances would be reclaimed as soon as activities are complete to restore vegetative cover. Within the fenced mine area, additional Applicant-Committed EPMs such as anti-glare light fixtures with fugitive light control designs would be used to limit light pollution; light fixtures would be placed at the lowest practical height and directed at the ground and/or work areas to avoid being cast skyward or over long distances; shields and/or louvers would be used on light fixtures and full cut-off type fixtures would be used where possible.

Most of the disturbances and proposed project facilities visible from publically accessible areas would be located in the background or seldom seen areas within areas designated as BLM VRM Class IV as shown on Figure 3.16-1. These VRM classes allow for moderate to major changes to the landscape during construction, operation, and reclamation of the proposed project. The changes to the scenic quality of the existing landscape at each KOP (Figure 3.16-1) as a result of the addition of these elements are described below. The degree of contrast that the form, line, color, and texture elements of the proposed project would have with the features of the existing landscape at each KOP is also described below.

### **KOP 1**

A visual simulation was not prepared for KOP 1. Based on the position of the KOP relative to the proposed project components and existing topography of the landscape, the proposed project components that would be visible from this KOP include the North and South WRDAs and the heap leach pile.

The North and South WRDAs would be dark brown, flat or rounded forms. The proposed heap leach pile would be medium to light brown. The color of the WRDAs would represent a moderate to strong degree of contrast with the colors of surrounding vegetation cover. These components would be in the background area.

The proposed North and South WRDAs and heap leach pile would be located in an area managed as VRM Class IV. The moderate to strong degree of contrast that the proposed WRDAs and heap leach pile would have with the form, line, and color elements of the existing landscape conforms to the management objectives of VRM Class IV.

### **KOP 2**

KOP 2 would be observed by casual observers traveling on BLM Road 4006 and on CR 1177. Based on the visual simulation, a few of the Proposed Action power line poles would be visible from KOP 2. The proposed power line poles visible from KOP 2 would be located in an area designated as VRM Class IV. Under the Proposed Action, Northern Power Line Route Alternative, Southern Power Line Route Alternative, Modified County Road Re-Route Alternative and Western Tailings Storage Facility Alternative, if White Pine County decides to widen the proposed county road re-route to approximately 30 feet, a small portion of the



widened BLM 4006 would be visible from KOP 2. The portion of BLM 4006 visible from KOP 2 would be located in an area designated as VRM Class IV.

### Visual Simulation of KOP 2 Looking Southwest



The proposed power line poles (monopoles) would appear as thin vertical lines in the middleground area. The proposed power line would represent a weak to moderate degree of contrast in form, line, color and texture relative to the elements of the existing landscape because it would be more than three miles away, low on the horizon, and the dark poles would blend into the dark background. The proposed project components would conform to the management objectives of VRM Class IV.

If White Pine County decides to widen the proposed county road re-route, the widened portion of the BLM 4006 would introduce a thin horizontal line, which would not be vegetated during operations; therefore, the tan to light brown colors and fine to medium texture of the unvegetated portions of the widened portion of BLM 4006 would contrast with the green colors and medium to coarse textures of the existing surrounding vegetation cover. The proposed activity would result in a weak to moderate degree of contrast in form, line, color and texture relative to the elements of the existing landscape in the surrounding middleground area. The proposed project components would conform to the management objectives of VRM Class IV.

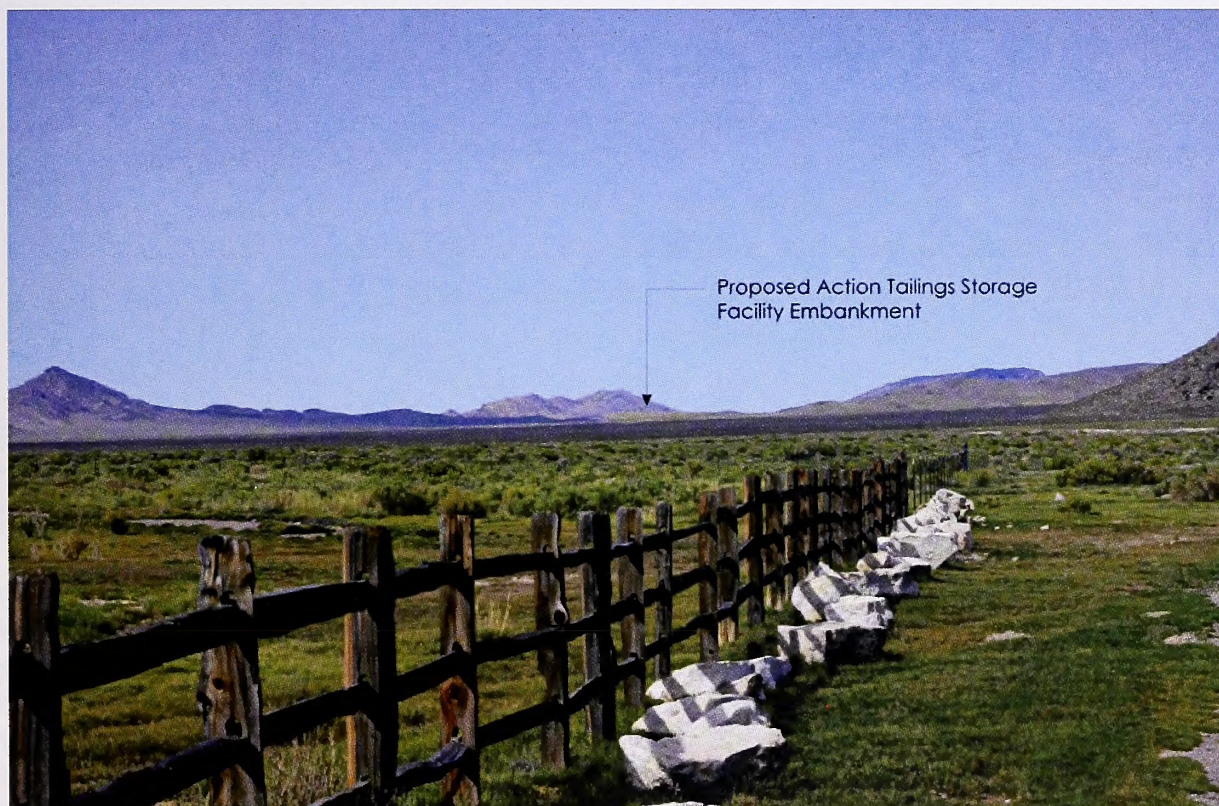
### **KOP 3**

Based on the visual simulation, portions of the Proposed Action TSF embankment would be visible from KOP 3. The portions of the Proposed Action TSF embankment visible from KOP 3 would be located in an area designated as VRM Class IV. This KOP would be observed by casual observers traveling on SR 379 and occupants of the Duckwater Shoshone Reservation.



The Proposed Action TSF embankment would introduce a flat or rounded near horizontal or irregular, rectangular or trapezoidal landform at the skyline in the middleground area at the skyline and would remain unvegetated during operations; therefore, the brown colors and fine to medium texture of the TSF embankment would contrast with the green colors and medium to coarse textures of the existing surrounding vegetation. The Proposed Action TSF would represent a weak degree of contrast relative to the form, line, color and texture elements of the existing landscape of the surrounding middleground area because the proposed landform would be approximately 15 miles away, low on the horizon, and is anticipated to blend into the horizon and be difficult to discern from the background. The Proposed Action TSF embankment would conform to the management objectives of VRM Class IV.

### Visual Simulation of KOP 3 Looking North

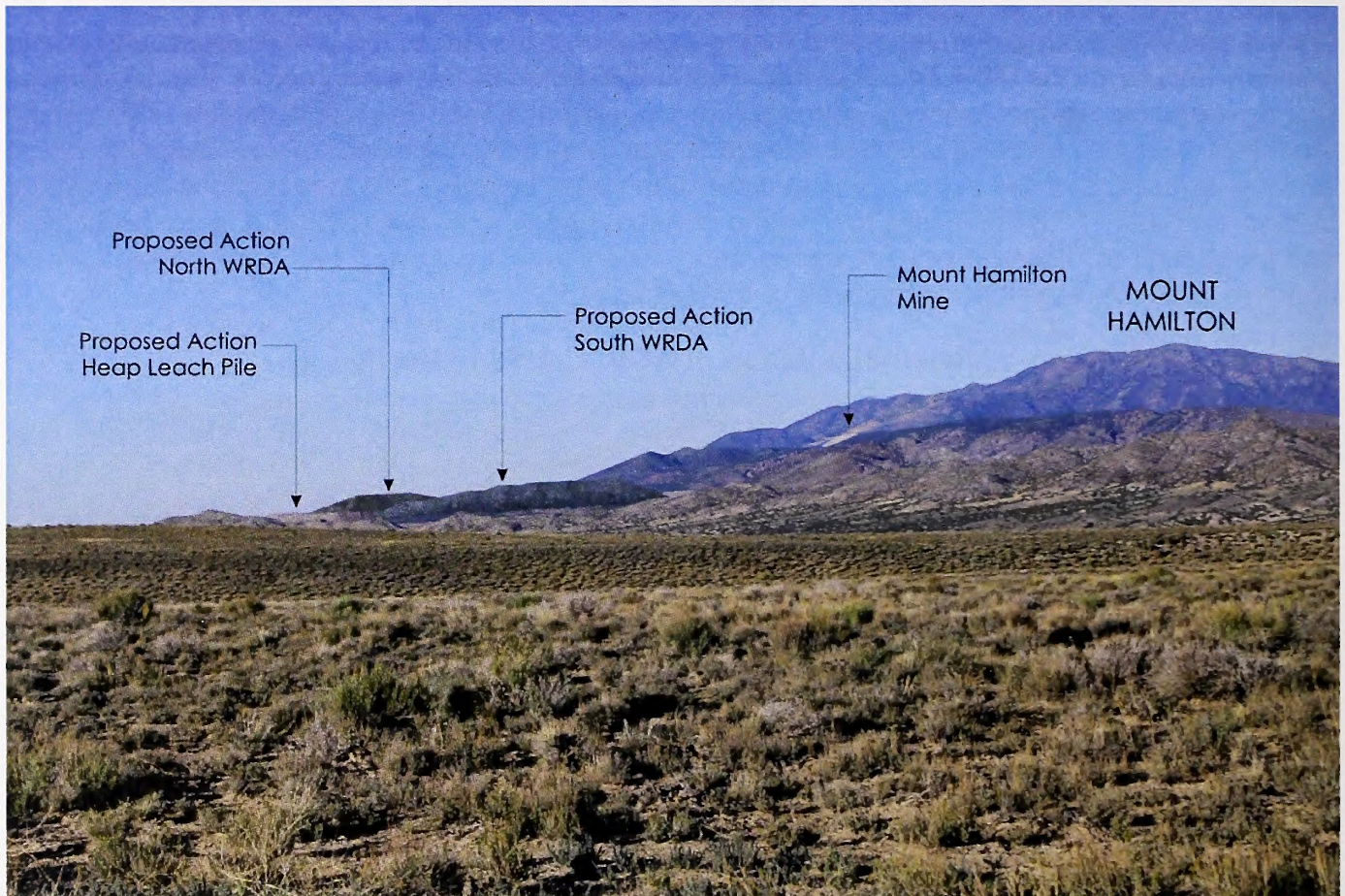


### KOP 4

Based on the visual simulation, the proposed heap leach pile and North and South WRDAs would be visible from KOP 4. The portions of the proposed heap leach pile and North and South WRDAs visible from KOP 4 would be located in an area managed as VRM Class IV. KOP 4 would be observed by casual observers traveling on SR 379.



### Visual Simulation of KOP 4 Looking Northeast



The heap leach pile would be medium to light brown. The North and South WRDAs would appear as dark brown, flat or rounded forms. The color of both the heap leach pile and the WRDAs would be the direct effect of an absence of vegetation cover during operation of the proposed project. The proposed heap leach pile and WRDAs would introduce flat to rounded, near horizontal and irregular lines below the horizon and would remain unvegetated during operations; therefore, the brown colors and fine to medium textures of the proposed landforms would contrast with the green colors and medium to coarse textures of the existing surrounding vegetation.

The visible portions of the proposed activity would represent a weak to moderate degree of contrast relative to the form, line, color and texture elements of the existing landscape of the surrounding middleground area because the proposed landforms would be approximately 8 miles away, and are anticipated to blend into the horizon and be difficult to discern from the background. The proposed heap leach pile and WRDAs would conform to the management objectives of VRM Class IV.

#### ***4.16.4 Northern Power Line Route Alternative***

Visual effects for the proposed facilities within the Plan area would be similar in type, intensity and duration as those described for the Proposed Action. Under this alternative, the power line route would be shorter relative to the Proposed Action power line, and in a different location. Based on the visual simulation, portions of this proposed alternative power line would appear as thin vertical lines in the middleground area of KOP 2. Those portions of the power line visible



from KOP 2 would be located in an area designated as VRM Class IV. The proposed project facilities would represent a weak to moderate degree of contrast in form, line, color and texture relative to the elements of the existing landscape because it would be more than three miles away, low on the horizon, and the dark poles would blend into the dark background. The project components would conform to the management objectives of VRM Class IV.

#### ***4.16.5 Southern Power Line Route Alternative***

Visual effects for the proposed facilities within the Plan area would be similar in type, intensity and duration as those described for the Proposed Action. Under this alternative, the power line would be shorter and in a different location compared to the Proposed Action power line. Based on the visual simulation, portions of the proposed power line under this alternative would appear as thin vertical lines in the background area of KOP 2. The portions of the power line that would be visible from KOP 2 would be located in an areas designated as VRM Class IV. The proposed project facilities would represent a weak to moderate degree of contrast in form, line, color and texture relative to the elements of the existing landscape because the proposed alternative power line would more than three miles away, low on the horizon, and the dark poles would blend into the dark background. The project components would conform to the management objectives of VRM Class IV.

#### ***4.16.6 Northwest Main Access Route Alternative, Northern Power Line Route***

Visual effects of the proposed facilities within the Plan area would be similar in type, intensity, and duration to those described for the Proposed Action. Under this alternative, a different main access route and a different power line route would be used compared to the Proposed Action (Figure 2.4-2). Visual impacts associated with the power line under this alternative would be similar to those described for the Northern Power Line Route Alternative in the sections above.

Based on the visual simulation, a segment of the widened BLM 4006 would be visible from KOP 2. The portion of BLM 4006 that would be visible in KOP 2 would be located in an area designated as VRM Class III. The widened road would appear as a thick horizontal line within the middleground area. The road would not be vegetated during operations; therefore, the tan to light brown colors and fine to medium texture of the unvegetated portions of the proposed road would contrast with the green colors and medium to coarse textures of the existing surrounding vegetation cover.

The proposed activity would result in a weak to moderate degree of contrast in form, line, color and texture relative to the elements of the existing landscape in the surrounding middleground area because the road would be more than 5 miles away, low on the horizon, and is anticipated to blend into the horizon and be difficult to discern from the background. This segment of widened road along the alternative main access is not expected to dominate the view of the casual observer; therefore would conform to the management objectives of VRM Class III.

#### ***4.16.7 Northwest Main Access Route Alternative, Southern Power Line Route***

Visual effects of the proposed facilities within the Plan area would be similar in type, intensity and duration to those described for the Proposed Action. Under this alternative, a different main access route and a different power line route would be used compared to the Proposed Action (Figure 2.4-2). Visual impacts associated with the proposed power line included in this alternative would be the same as those described for the Southern Power Line Route Alternative. Visual impacts associated with the proposed alternative main access route (Figure 2.4-2) would be visible from KOP 2 as described in the following paragraph.



Based on the visual simulation, a segment of the widened BLM 4006 would be visible from KOP 2. The portion of BLM 4006 that would be visible in KOP 2 would be located in an area designated as VRM Class III. The widened road would appear as a thick horizontal line within the middleground area. The road would not be vegetated during operations; therefore, the tan to light brown colors and fine to medium texture of the unvegetated portions of the proposed road would contrast with the green colors and medium to coarse textures of the existing surrounding vegetation cover.

The proposed activity would result in a weak to moderate degree of contrast in form, line, color and texture relative to the elements of the existing landscape in the surrounding middleground area because the road would be more than 5 miles away, low on the horizon, and is anticipated to blend into the horizon and be difficult to discern from the background. This segment of widened road along the alternative main access is not expected to dominate the view of the casual observer; therefore would conform to the management objectives of VRM Class III.

#### ***4.16.8 Modified County Road Re-Route Alternative***

Visual effects would be similar in type, intensity, and duration to those described for the Proposed Action. Relative to the Proposed Action, the county road re-route would use only existing roads under this alternative.

Under the Modified County Road Re-Route Alternative, a small portion of the proposed route would be visible from KOP 2. The portion of the route visible from KOP 2 is located in an area designated as VRM Class III. KOP 2 would be observed by casual observers traveling on BLM Road 4006 and on CR 1177.

The proposed road re-route would introduce a thin horizontal line, portions of which would not be vegetated during operations; therefore, the tan to light brown colors and fine to medium texture of the unvegetated portions of the proposed road would contrast with the green colors and medium to coarse textures of the existing surrounding vegetation cover. The proposed activity would result in a weak to moderate degree of contrast in form, line, color and texture relative to the elements of the existing landscape in the surrounding middleground area because the road would be more than 5 miles away, low on the horizon, and are anticipated to blend into the horizon and be difficult to discern from the background. The proposed road would conform to the management objectives of VRM Class III.

#### ***4.16.9 Western Tailings Storage Facility Alternative***

Visual effects would be similar in type, intensity, and duration to those described for the Proposed Action. Under the Western TSF Alternative, a small portion of the southern embankment of the Western TSF would be visible from KOP 3. The portion of the Western TSF visible from KOP 3 would be located in an area designated as VRM Class IV. This KOP would be observed by casual observers traveling on SR 379 and occupants of the Duckwater Shoshone Reservation.

The proposed TSF embankment would introduce a flat or rounded near horizontal or irregular, rectangular or trapezoidal landform at the skyline in the middleground area at the skyline and would remain unvegetated during operations; therefore, the brown colors and fine to medium texture of the TSF embankment would contrast with the green colors and medium to coarse textures of the existing surrounding vegetation. The proposed TSF would represent a weak degree of contrast relative to the form, line, color and texture elements of the existing landscape



of the surrounding middleground area because the proposed landform would be approximately 15 miles away, low on the horizon, and is anticipated to blend into the horizon and be difficult to discern from the background. The Proposed Action TSF embankment would conform to the management objectives of VRM Class IV.

#### ***4.16.10 No Action Alternative***

Under the No Action Alternative, the proposed project would not be constructed as planned. There would be no project-related impacts to visual resources beyond the authorized exploration activities described in Section 2.2.

#### ***4.16.11 Additional Monitoring and Mitigation***

No additional monitoring is required. No mitigation measures are required.

### **4.17 RECREATION**

This section describes the effects of the Proposed Action and alternatives on recreational resources. Potential impacts to recreational resources include restricted access to recreational land and degradation of the quality of the public experience in areas near the mine activities.

The Proposed Action and alternatives are located entirely on BLM-administered land (Figure 1.1-2), which is available for dispersed recreation, including hunting and OHV use, fishing, camping, cross-country skiing, horseback riding, caving, rock climbing, hiking, sightseeing, outdoor photography, wildlife and bird watching, heritage-related tourism, and mountain biking (BLM 2008b; BLM 2012h; WPCPLUAC 2007). No developed recreation sites or facilities are located within the analysis area; therefore, none of the alternatives would impact developed recreation sites or facilities; however, surface disturbance and fencing would impact dispersed recreation opportunities.

#### ***4.17.1 Analysis Areas***

The analysis areas are the same areas used for Wild Horses (Section 4.12).

#### ***4.17.2 Indicators***

Indicators used to assess potential impacts to recreational resources include the following:

- Potential restricted access to recreational use areas.

#### ***4.17.3 Proposed Action***

##### **Construction**

Under the Proposed Action, approximately 9,300 acres of BLM-administered recreational resources would be impacted and would be unavailable for OHV use or hunting during the construction period. This area would include the 8,757-acre fenced mine area (Figure 2.3-1). Recreational users would be excluded from the fenced mine area for the life of the mine for security and safety reasons. Surface disturbance would occur on approximately 140 acres outside of the fenced mine area during construction and maintenance of the entrance facilities, water pipeline, proposed county road re-route, power line, and proposed second well. In addition, up to approximately 400 acres of exploration would occur within the Plan area. While



the recreation setting would be altered in portions of the analysis area, the Proposed Action would not conflict with the existing management objectives that are stated in the Ely District Approved Resource Management Plan (BLM 2008b).

Fencing the mine area and restricting access to the enclosed area would exclude that area from use for dispersed recreation activities, negatively affecting members of the public who would otherwise use the approximately 8,800-acre area for dispersed recreation activities. This impact would be for the projected 10-year mining period until the mine is closed, the area reclaimed, and the fence removed. Public lands within the BLM Ely District and surrounding areas of public lands provide the types of dispersed recreation opportunities found within the analysis area.

A certain percentage of the recreational users unable to access desired resources or opportunities within the analysis area would be anticipated to use other areas within the Ely District and surrounding areas of public lands for dispersed recreation. However, the displacement of recreational users onto public lands outside of the analysis area could have an adverse impact on other recreational users that currently use these lands for dispersed recreation. Recreation users seeking recreation experiences of isolation and solitude while engaging in dispersed recreation would be most sensitive to increased levels of use in these areas. Public access to the analysis area would be permissible again once reclamation of the proposed project is complete. Impacts to recreation resources related to displacement of users from within the analysis area would be for the projected 10-year mining period until the mine is closed, the area reclaimed, and the fence removed.

No developed recreation sites or facilities within the analysis area. Loss of access to dispersed recreation resources in the active mining area may result in increased use of developed sites outside the area as a result of displaced recreationists. The quality of dispersed recreation on neighboring lands near the analysis area may be affected by the visual disruption of the physical presence of the project within the landscape (Section 4.16). Visual disruptions during the life of the project would change the area accessible to users that desire more primitive recreational experiences with little to no evidence of human modification to the natural landscape. Reclamation of the surface disturbance within the analysis area would reduce the visual disruption that the Proposed Action would have beyond the life of the project. However, some components of the proposed project would remain somewhat visibly evident after reclamation is completed, such as the mine pit and the ET cell.

Human modifications to the natural landscape resulting from the Proposed Action would occur within a landscape that contains existing human modifications. The analysis area either contains, or is located within close proximity to, US 50 and numerous unpaved roads. One or more of these existing modifications is visible from many areas of the neighboring lands that are located within close proximity to the analysis area and from within the analysis area. There are large areas of public lands located elsewhere in the BLM Ely District and surrounding areas of public lands that are accessible for dispersed recreation uses and that provide primitive recreational experiences. The areas within the analysis area that are accessible to users that seek primitive recreational experiences from dispersed recreation uses occur within a landscape containing existing human modifications, such as roads and the pre-existing Easy Junior mine.

The quality of dispersed recreation on neighboring lands near the analysis area may also be affected by increased noise levels during the life of the project. Much like the visual disruption of the proposed project, increased noise would reduce the area that is accessible to recreation users that desire more primitive recreational experiences with little to no sights or sounds of humans evident. As described above, numerous unpaved roads exist in and near the analysis



area. Travel on these roads contribute to the existing ambient noise in the area. Therefore, existing ambient noise in the area is partially comprised of sounds from human activities. Increased noise levels would result from operation of project equipment and vehicles, and the active construction, operation, and reclamation of the proposed project. Increased noise from the Proposed Action would occur during the life of the project. The Proposed Action would increase the volume of the ambient noise in the area, and increase the percentage comprised of sounds from human activities. The areas that would be affected by increased noise levels would be limited to those within closest proximity to the analysis area because project noise would attenuate as users move further from the analysis area.

There are large areas of public lands located elsewhere in the BLM Ely District that are accessible for dispersed recreation uses and that provide primitive recreational experiences with little to no sounds of humans. The portions of the analysis area that are accessible to users seeking primitive recreational experiences from dispersed recreation contain existing noise sources related to human activities because of the existing roads and ongoing exploration activities.

Increased human activity and noise levels would likely displace mule deer, pronghorn antelope, and other game species from use of the analysis area and areas within close proximity to the analysis area. Displacement of wildlife from these areas would affect recreation resources by reducing the overall area available for hunting, which is the most common recreational use of the area. Displacement of game and non-game wildlife species would affect other recreation opportunities that are related to the presence of wildlife, such as bird-watching or photography. Public access to the analysis area would be restricted, which would also prevent hunting or any other recreational activities from occurring within the area. The proposed construction activities could occur during the hunting seasons of large game. During mining operations and reclamation, the impact that wildlife displacement and restricted access would have on hunting and other wildlife-related recreation activities would be for the projected 10-year mining period until the mine is closed, the area reclaimed, and the fence removed. Impacts to hunting are anticipated to be minimal because the analysis area represents only a small portion of the area open to hunting within Hunt Area 13.

Following reclamation, the analysis area would be accessible for recreation uses, including hunting. Reclamation vegetation would provide wildlife habitat, but it may differ from the types of habitat that existed prior to the proposed project. Thus, the wildlife species that use the analysis area after reclamation and their pattern of use within the analysis area may change. This change would be a long-term impact on recreation resources. See Section 4.9, Wildlife, for more detailed information pertaining to the potential impacts on wildlife and wildlife habitat.

In the northern portion of the analysis area, segments of Green Springs Road (CR 5) and Easy Junior Road (CR 1177) are adjacent to US 50 and pass through parts of the Loneliest Highway SRMA (Figure 3.15-1). Mine-related traffic would travel on Green Springs Road for the life of mine. Up to approximately 354 additional daily trips would occur during construction as shown in Table 4.8-2 and described in Section 4.8.3. No road improvements, mine-related facilities or construction disturbances are proposed within the SRMA; therefore, public access would not be restricted in the SRMA. The recreation destinations and attractions noted to be of particular popularity, such as Cold Creek Reservoir and the Garnet Hill rock hounding area (BLM 2008b), are not located within the portion of the SRMA in which the analysis area occurs. The analysis area is also located within the GBNHA. No road improvements, disturbances or proposed facilities would be constructed within the SRMA or in the vicinity of known special resources within the GBNHA.



Construction of the proposed power line corridor and associated maintenance road could attract unauthorized OHV use. The public could make unauthorized OHV use of the power line corridor and maintenance road to access previously inaccessible public lands or create new routes to destination areas resulting in adverse impacts to natural resources in the analysis area. Impacts to recreation could include degradation of the quality of recreational resources by a network of OHV routes, however, the degree of impacts cannot be estimated as the actual level and location of unauthorized route proliferation is speculative at this time. Overall, OHV use and motorized activities are expected to continue to be concentrated on existing roads and designated trails within White Pine County similar to existing trends.

### **Operations, Maintenance, and Reclamation**

The Applicant-Committed EPMs described in Table 2.3-8 would be implemented to help minimize effects to recreation. For example, disturbances would be reclaimed as soon as activities are complete to restore recreation access. In addition, fences associated with mining activities would be removed at the end of reclamation and closure of each component. If the TSF were to fail, impacts could include short-term or long-term changes to resources. The intensity and extent of the effects would depend on the size of the failure. Short-term or long-term loss of access to dispersed recreation could occur.

#### ***4.17.4 Northern Power Line Route Alternative***

Construction, operations, maintenance and reclamation under this alternative would result in similar types, intensity and duration of impacts to recreational resources as described under the Proposed Action. Relative to the Proposed Action, under this alternative there would be approximately 33 fewer acres of disturbance to BLM-administered land available for dispersed recreation.

#### ***4.17.5 Southern Power Line Route Alternative***

Construction, operations, maintenance and reclamation under this alternative would result in similar types, intensity and duration of impacts to recreational resources as described under the Proposed Action. Relative to the Proposed Action, under this alternative there would be approximately 34 fewer acres of disturbance to BLM-administered land available for dispersed recreation.

#### ***4.17.6 Northwest Main Access Route Alternative, Northern Power Line Route***

Construction, operation, maintenance and reclamation under this alternative would result in similar types, intensities, and duration of impacts as those described for the Proposed Action. Power line pole installation would result in 13 acres of disturbance, compared to 35 acres under the Proposed Action.

Construction of this alternative main access route would result in approximately 10 acres of surface disturbance related to obtaining gravel from two 5-acre pits located along the route. These areas would be reclaimed after completion of road construction.

Several segments of existing roads that already support commercial truck traffic would make up part of the alternative main access route. Other segments of the route would be constructed or widened. Surface disturbance would include approximately 92 acres of road construction and widening along this alternative main access route. In comparison, the Proposed Action main access route was upgraded several years ago, and no new surface disturbance would be required during road maintenance activities.



Overall, 64 greater acres of surface disturbance would occur under this alternative compared to the Proposed Action. Long-term impacts would be similar to those described under the Proposed Action.

#### ***4.17.7 Northwest Main Access Route Alternative, Southern Power Line Route***

Construction, operation, maintenance and reclamation under this alternative would result in similar types, intensities, and duration of impacts as those described for the Proposed Action. Power line pole installation would result in 14 acres of short-term disturbance, compared to 35 acres under the Proposed Action.

Construction of this alternative main access route would result in approximately 10 acres of short-term surface disturbance related to obtaining gravel from two 5-acre pits located along the route. These areas would be reclaimed after completion of road construction.

Several segments of existing roads that already support commercial truck traffic would make up part of the alternative main access route. Other segments of the route would be constructed or widened. Short-term surface disturbance would include approximately 99 acres of road construction and widening along this alternative main access route. In comparison, the Proposed Action main access route was upgraded several years ago, and no new surface disturbance would be required during road maintenance activities.

Overall, 72 greater acres of short-term surface disturbance would occur under this alternative compared to the Proposed Action. Long-term impacts would be similar to those described under the Proposed Action.

#### ***4.17.8 Modified County Road Re-Route Alternative***

The impacts associated with the construction, operation, and maintenance of this alternative would be similar in type, intensity and duration as those described for the Proposed Action, except that under this alternative, the modified county road re-route would be approximately 1 mile longer than the Proposed Action county road re-route. Overall, this alternative could result in 1 less acre of long-term disturbance compared to the Proposed Action.

#### ***4.17.9 Western Tailings Storage Facility Alternative***

The impacts associated with the construction, operation, and maintenance of this alternative would be similar in type, intensity and duration to those described for the Proposed Action, except it would result in fewer acres of disturbance. Relative to the Proposed Action, the fenced area would be smaller, resulting in 1,708 acres fewer acres of short-term impact due to restricted access.

#### ***4.17.10 No Action Alternative***

Under the No Action Alternative, the Proposed Action would not be constructed and there would be no associated project-related impacts to recreational resources excluding those impacts that are the result of actions previously approved under the Midway Gold Pan Project Exploration Amendment Preliminary Environmental Assessment (BLM 2012h). Impacts related to increased noise and access restrictions would not persist following reclamation of the areas affected by this approved action. Following reclamation, the intensity of the impact resulting from the disruption of this approved action would be reduced.



### 4.17.11 Additional Monitoring and Mitigation

No additional monitoring is required. No mitigation measures are required.

## 4.18 SOCIOECONOMIC RESOURCES

### 4.18.1 Analysis Areas

The analysis area for socioeconomic resources is the same for all alternatives and includes portions of White Pine County (with a focus on the City of Ely, the unincorporated communities of Ruth and McGill, the Ely Shoshone Reservation, and adjacent unincorporated portions of the county), Eureka County (with a focus on the unincorporated community of Eureka and the nearby 3rd Street/Devil's Gate area in Diamond Valley), and the Duckwater Shoshone Reservation (including the community of Duckwater).

The analysis area was selected because it includes locations where employees would live and work, in other words, areas where housing or land is available and that are within a reasonable daily commuting distance of the proposed mine site as shown in Table 4.18-1, where the major project-related tax revenues would accrue, and where the majority of project-related commercial transactions would occur.

**Table 4.18-1 Communities In the Analysis Area: Population and Travel Distance to Proposed Mine Site**

Location	Approximate Travel Distance to Proposed Mine Site (miles)	Population
<b>White Pine County</b>		
Ely	64	4,066
Ruth	60	418
McGill	76	1,175
<b>Eureka County</b>		
Eureka	40	717
Duckwater Shoshone Reservation	21*-60	140

**Notes:**

The travel distance from the Duckwater Shoshone Reservation to the proposed mine site depends upon the route taken. In BCLLC/SDLLC's socioeconomic baseline report (2013), 21 miles reflected travel on Duckwater Road to the two-track BLM 4109A to the two-track portion of Easy Junior Road to the proposed mine, and 60 miles reflected travel on Road Duckwater Road to US 50 to the unpaved Easy Junior Road. For the Proposed Action, traffic on the two-track portion of Easy Junior Road south of the mine area would be directed onto the proposed county road re-route. This route would be approximately 12 miles long.

Source: Gold Rock Project Baseline Socioeconomic and Environmental Justice Conditions (Blankenship Consulting LLC and Sammon/Dutton LLC [BCLLC/SDLLC] 2013).

### 4.18.2 Indicators

Indicators used to assess potential impacts to socioeconomic resources include the following:

- Employment, public revenue base, housing, and the demand for community services and schools
- Recreational use of the area

The social and economic characteristics of the analysis area were analyzed to determine the potential effects of the Proposed Action and the Alternatives on employment, population,



income, housing, and services. Fiscal impacts were determined using information from Midway. Where possible, the economic and social effects of the Proposed Action and Alternatives were quantified. When quantification was not possible, the analysis includes a qualitative description of possible effects and potential issues.

The economic impacts of constructing and operating the mine were estimated by leveraging the information contained in the Pan Project EIS, which utilized RIMS II Multipliers, to indirectly determine appropriate multipliers for the region. RIMS II multipliers are the sum of direct, indirect and induced effects divided by the direct impacts. These impact types are defined below:

**Direct Impacts:** The initial investment or spending within a geographic region is defined as the direct effect. During the construction phase, the direct effects include construction employment, and local spending for construction-related services, supplies and materials.

**Indirect Impacts:** The inter-industry impacts that measure the economic effects associated with the directly impacted industries selling and purchasing goods and services to and from other industries are the indirect impacts or effects. The indirect impacts associated with construction include industries located in the counties within the affected area that support the construction activity such as engineering design and architectural services, wholesale and retail trade purchases.

**Induced Impacts:** The effects of increased consumer and household spending that result from the direct and indirect income changes are the induced impacts.

This analysis estimated the total economic impacts (direct, indirect, and induced) associated with construction and operation of the Proposed Action. The construction analysis included the impact of construction worker spending in the affected area, as well as purchases of supplies and materials from local businesses during construction. The operations phase analysis was based on wages paid to mine employees. The effects that were measured for both phases of the project include employment (full-time and part-time jobs) and labor income (wages, salaries, and bonuses) paid to these workers. Information used in developing the estimates was provided by Midway.

### ***4.18.3 Proposed Action***

#### **Economic Impacts**

##### **Construction**

Project construction would take between six and nine months, depending on weather conditions, and would require an average of approximately 250 skilled and unskilled workers over the construction period; at its peak, the construction workforce would number approximately 300.

To the extent possible, the staffing for the construction phase would draw from the existing construction workforce in the affected area; however, Midway expects that a large share of skilled trades (electricians, plumbers, heavy equipment operators) would be drawn from outside the affected area, most likely from Elko but possibly from as far away as Las Vegas. These workers would be hired through trade groups, and would stay in the affected area for short periods in temporary housing.

General labor needed for the project would be supplied by the construction contractor and



would include a combination of local residents and workers residing outside of the affected area. Midway estimated that 20 percent of the construction labor force for the Pan Mine would be supplied locally with the remaining workers traveling from outside of the area. If these same ratios held for the Gold Rock Mine Project, approximately 50 construction laborers would be hired from the local area, with the remainder traveling from outside the area.

The number of construction workers hired locally for the Gold Rock Mine Project may be higher than that realized during construction of the Pan Mine depending upon the availability of labor from the Barrick Ruby Hill Mine, which is slated for closure in 2015, and from other mines in the area that may reduce their workforce in the near future. Workers hired from outside the area would either relocate temporarily or stay in temporary housing in Ely, Ruth, McGill, Lund or Eureka; experience from the Pan Mine Project indicates that construction workers show a preference for staying in Eureka, although it is impossible to determine where Gold Rock Mine Project construction workers would stay. It is not anticipated that migrant construction workers would stay on the Duckwater Shoshone Reservation due to a lack of suitable housing on the Reservation.

The total cost of construction for the Proposed Action is estimated to be between \$270 and \$300 million, or approximately four times the approximately \$70 million construction cost for the Pan mine; accordingly, the amount spent locally for the Proposed Action on material/equipment and labor would also be greater. It is estimated that the labor costs associated with construction of the Proposed Action would range from \$50 to \$55 million. Assuming that 40 percent of this amount is spent in the affected area, approximately \$20 to \$22 million would be spent locally during construction, which would create up to 253 full- and part-time jobs in the local economy, and would generate up to \$14 million in income for area residents.

In addition, up to \$17 million may be spent locally for material and equipment; this would support up to 77 full- and part-time jobs in the local economy, and would generate up to approximately \$4 million in income for area residents. The top industries benefitting from the increased employment and spending would be construction, retail trade, food services, drinking establishments, and accommodations. Businesses and local governments would also realize beneficial, short-term impacts. Businesses would benefit from purchases made by construction workers, and material and equipment purchases made by Midway. Local governments would realize increased tax revenues generated from this spending. These beneficial, short-term impacts would not be significant, however, as they would represent a continuation of the beneficial impacts realized from construction of the Pan Mine, and could offset to some extent the economic losses associated with the closure of the Ruby Hill Mine.

## **Operations**

The operations phase (active mining and milling period) would run for approximately 10 years. During this phase 150 to 250 full-time employees would be required annually. Total annual payroll during operations is projected to range from \$11.5 to \$19 million and includes benefits and incentive pay in addition to wages and salaries. Hiring for operations would run concurrent with construction.

Midway would begin hiring and training workers for operations at the onset of construction and would expect to be fully staffed when construction is complete. Midway would target as many employees as possible from the affected area and expects to fill all unskilled trades with people already living in the area. Some number of workers could be hired from residents of the Duckwater Shoshone Tribe living on the Duckwater Shoshone Reservation. However, the low unemployment rate in Eureka and White Pine counties combined with the area's small



population base would require Midway to recruit some workers from outside of the affected area. While a number of factors would influence the percentage of the operations workforce hired from within the affected area, it is likely to be less than the 52 percent target stated for the Pan Mine.

At full operation, Midway anticipates that 75 percent of mine employees (approximately 110 to 190 employees) would reside in White Pine County, Eureka County (primarily in Eureka) and on the Duckwater Shoshone Reservation. These employees would receive an estimated \$7.9 to \$13.3 million annually in wages and salaries. The remaining mine employees would live outside of the affected area and would either commute to the job site on a daily basis or maintain a residence outside of the affected area and stay in temporary housing during their shifts.

The RIMS II model was used in the Pan Mine Project EIS to identify the direct, indirect and induced impacts on the affected area during operations. Using the ratios shown in Table 4.16-2 of the Pan Mine Project EIS, it is estimated that the Gold Rock Mine Project Proposed Action operations would support or create 176 to 296 jobs in the local economy and generate between \$12.1 and \$20.3million annually in labor income for residents in the analysis area. This includes 113 to 190 direct jobs held by residents of White Pine County, Eureka County, and the Duckwater Shoshone Reservation and 63 to 106 indirect and induced jobs in other businesses located in the analysis area. Given the amenities and business structure in the affected area, most of these indirect and induced jobs would likely be created in White Pine County. The impacts on jobs and income are conservative estimates as they are based solely on the wages paid to workers who live in the affected area. Although some of the wages paid to non-resident workers would likely be spent in the affected area, the amount of that spending is unknown and was not included in the analysis.

If the TSF were to fail, impacts could include short-term or long-term changes to resources. The intensity and extent of the effects would depend on the size of the failure. Impacts to socioeconomic resources could occur through the loss of mine productivity due to reduction or interruption in operation.

## **Reclamation**

Reclamation and post-closure monitoring would extend the life of the project to approximately 48 years. Active reclamation work would occur over a period of approximately three years from the cessation of mining and milling; passive work during the reclamation period (e.g., groundwater monitoring) would occur over a period of 30 years. Reclamation and post-closure employment would be substantially lower than during the active mining period (operations phase). The impacts to be realized during reclamation and post-closure have not been quantified due to the long timeframe prior to the start of this phase.

## **Recreation-Related Economic Impacts**

The Ely District Approved Resource Management Plan (BLM 2008b) notes that “scenery is a draw to tourism and backcountry recreation, which has led to increased concerns over preserving visual resources.” As presented in Section 3.16, most of the analysis area falls within VRM Class IV; this means that the visual appeal of the landscape is low; that the public sensitivity is low; that the landscape is distant from viewers; or some combination of one or more of these factors. Applicable planning documents do not define any scenic views or vistas in the analysis area.

As presented in Section 3.17, the area around the proposed mine site is available for dispersed



recreation. Hunting is one of the most common recreational activities in the area. The Loneliest Highway SRMA is adjacent to US Highway 50 and includes all BLM lands extending approximately four miles to either side of US 50; however, there are no recreation destinations or attractions within the portion of the SRMA in the vicinity of the proposed mine site.

As presented in Section 4.17, the sights and sounds of the proposed activities and mine facilities would be noticeable by some recreationists and could affect the overall scenic attractiveness for recreational users seeking a remote experience. However, while the recreation setting would be altered in portions of the analysis area, the proposed facilities would be compatible with BLM-approved management direction, and large areas of unaffected lands would remain available in the vicinity of the Proposed Action. In addition, as presented in Section 4.16, all project-related activities and features would be compliant with, or would conform to, the management objectives of VRM Class III and IV, and no impacts would be expected within the Loneliest Highway SRMA.

Therefore, because there are no scenic views or vistas defined in the area; because the Proposed Action would be compliant with, or would conform to, the management objectives of VRM Classes in the area; because the Proposed Action would be compatible with BLM-approved management direction; and because there are large areas of unaffected lands adjacent to the Proposed Action. Economic impacts to the sectors of the local economy that support tourism or recreational activities would be short-term during construction and during the long-term during the operations and reclamation phases.

### **Agriculture-Related Economic Impacts**

#### **Construction**

As presented in Section 4.10.2.1 above and in Table 4.18-2 below, the maximum potential impact during construction would be a temporary loss of 221 AUMs. Each AUM has been estimated to represent a direct economic impact of \$40.68, with indirect and induced economic impacts of \$33.20, for a total economic impact of \$73.88 per AUM (Resource Concepts, Inc. 2001; values adjusted to 2014 using BLS CPI Inflation Calculator). The potential direct and indirect/induced economic impacts are presented below.

In Eureka County, livestock accounted for \$6.774 million in value, and in White Pine County livestock accounted for \$11.594 million in value (USDA 2014). Production expenses for farms in Eureka County total approximately \$23 million and approximately \$21 million for farms in White Pine County (USDA 2014). During construction very small dollar values would be lost compared to the large livestock values and production expenses. the agricultural economies of either county (Table 4.18-2).

**Table 4.18-2 Annual Economic Impacts of Lost Animal Unit Months**

Allotment/Grazing Area or Pasture	AUMs Lost	Direct Economic Impact Lost, Eureka County	Direct Economic Impact Lost, White Pine County	Indirect/Induced Economic Impact Lost, Eureka and White Pine Counties
Newark/18 Mile House	1	\$40.68	0	\$33.20
South Pancake/West Pasture	1	0	\$40.68	\$33.20
Duckwater/Bull Corner and Poison Patch	221	0	\$8,949.60	\$7,337.20
Duckwater/ Green Springs	1	0	\$40.68	\$33.20

Notes:

AUM = animal unit month

AUM values rounded up to whole numbers from the data provided in Table 4.10-1.



## **Operations**

A permanent loss of 491 acres of rangeland, accounting for approximately 12AUMs, in the Bull Corner/Poison Patch Grazing Area of the Duckwater Allotment would result from the unreclaimed portions of the Proposed Action (Pit, the process pond, stormwater control facilities, sediment basins, and proposed county road re-route) (Figure 2.3-15). In current terms, the direct economic impact of this permanent loss would be valued at \$499.35 annually; the indirect and induced economic impact of this permanent loss would be \$407.53 annually. Successful reclamation of the WRDAs, and potential increased forage productivity associated with the WRDAs, may partially compensate for the permanent loss of the approximately 12AUMs.

## **Population-Related Social Impacts**

### **Construction**

As stated above, it is anticipated that 20 percent of the construction workforce would be hired from within the analysis area. The remaining 80 percent of the construction workforce would be drawn from outside the analysis area. While some number of the construction workforce may be hired by Midway and trained for operations jobs, the large majority of construction workers would be transient—that is, commuting to the jobsite, staying in temporary housing for some period of time, and then returning to their residences outside the analysis area when their work is complete. Some of the transient construction workforce (notably skilled tradespeople) would be in the analysis area for only very short periods of time (perhaps a few weeks); others would be expected to reside in the analysis area for 10 days during their workshift, and then return home for their 4 days off; and still others would remain in the analysis area for the duration of the construction period.

Given the short duration of the construction period and past experience, Midway does not expect that non-resident construction workers would relocate to the affected area unless they are subsequently hired by Midway for operations. Thus, potential population-related impacts during the construction period are expected to short-term.

### **Operations**

Mining operations would likely result in an increase in the population of the affected area. The Proposed Action would require a total of 150 to 250 workers. To the extent possible, Midway would hire local residents to work at the mine; however, given the low unemployment rate in the affected area and the skills required for operations positions, some of the operations-related workers would be hired from outside the affected area and would relocate to White Pine or Eureka counties. When the mine is fully operational, Midway expects that 75 percent of its employees (112-190 people) would reside in the analysis area and the remainder would commute from outside of the analysis area. This includes daily commuters (workers who live in communities outside of the analysis area and who travel to the mine each day) and weekly commuters (workers who maintain a residence outside the analysis area, live in temporary housing during the week, and return home at the end of their shift). The number of commuters may diminish over time depending on the availability of housing and other amenities in the area, and the employment levels at surrounding mining operations.

The Pan Mine Project FEIS (BLM 2013c) anticipated that only 35 of the 150 operations personnel would be relocations to the local area, and assumed that 15 existing residents of Eureka and 63 residents of other communities in the area would be hired to fill operations positions; this appears to assume that some number of the workers that would be displaced by



the cessation of operations at the Ruby Hill Mine would be hired to work at the Pan mine. Given the timing of the Gold Rock Mine Project (i.e., coming on line after the Pan Mine and after the planned cessation of operations at the Ruby Hill mine), a larger (but undetermined) number of workers are expected to relocate to the analysis area. Although the household characteristics of the operations and maintenance workforce that may relocate to the analysis area are not known, the prospect of long-term employment might attract some share of married workers who choose to relocate their spouses and children to the area. The possibility of work at the mine may also result in some population increase on the Duckwater Shoshone Reservation as tribal members relocate to the Reservation when mining jobs become available.

The average family size in the United States in 2010 was 3.14 people (Census Bureau 2010). Assuming that 25 percent of operations workers are commuters (the same percentage assumed in the Pan Mine Project EIS), and that the entirety of the remaining operations workers (113 to 190) relocate to the analysis area and bring families averaging 3.14 people each, the total direct effect on population would be an increase of approximately 355 to 597 people. It is expected that most of the relocating families would locate in either White Pine County (in Ely or an adjoining community) or the town of Eureka; however, some of the population increase could result from members of the Shoshone Tribe who are currently living elsewhere moving to the Duckwater Shoshone Reservation to take advantage of job opportunities presented by mining operations.

An increase in population of 355 to 597 people during the operations and maintenance phase of the Proposed Action would equate to a population increase of between approximately 4.7 and 7.9 percent. The impacts of this population growth would be long-term, and would be realized during the approximate 10-year active mining and milling period. Over the 10-year active mining and milling period, the population impacts would dissipate to the point where the increase in population would be subsumed and considered part of the existing environment, and thus there would be a less than significant impact to population.

## **Housing**

### **Construction**

Based on construction workforce estimates and residency assumptions described above, up to 240 workers at the peak of construction may commute to jobs at the proposed mine. The majority of these would be transient, single-status workers who would require temporary housing during their stay. Temporary housing accommodations could include hotels, motels, recreational vehicles, mobile homes, or apartment rentals. Currently, the availability of all such resources in the affected area is limited. During peak summer travel and during the work week, hotels, motels, and RV parks in the affected area routinely report full or near full occupancy (Damele 2012; Blankenship 2013).

The number of transient workers that may be drawn to the analysis area during the construction phase. Permanent residents of the area that rent could face short-term increased rental costs due to an increased demand for rental housing; conversely, owners of rental properties could see increased revenue from their properties. Local hotels and motels may realize improved and more-consistent revenue streams as some construction workers would know their schedules well in advance and could reserve rooms well into the future; these same hotels and motels may at the same time face the loss of custom from tourists and other visitors. Note that this loss of custom from tourists and other visitors may have indirect impacts elsewhere in the local economy, particularly in those sectors and on those businesses that rely on tourism.



It is difficult to forecast housing availability, as the magnitude of impacts to the housing market in the analysis area depends upon a variety of non-Project variables, including the employment levels at other mining projects in the analysis area and the actions taken by the private and public sectors to the acknowledged shortage of housing in the affected area (i.e., construction of additional short-term lodging, opening of currently-closed lodging properties, increases in the number of rooms for rent in private houses, or continuing/expanding actions by the public sector to incentivize/motivate the development of new housing).

Housing on the Duckwater Shoshone Reservation would not likely be affected during construction due to a lack of available rental housing units on the Reservation.

Regardless of the magnitude or type of the impacts or benefits, all construction-related impacts and benefits would be temporary, ending in six to nine months when the construction phase is complete.

### **Operations**

As presented above, it is conservatively estimated that 113 to 190 employees would relocate to the analysis area. Given the long-term nature of these positions, operations workers are likely to prefer conventional housing resources (e.g., single family homes, multifamily houses, or apartments) to temporary lodging (e.g., hotels, motels, recreational vehicles).

As presented in Section 3.18, there is an identified shortage of housing in White Pine County and Eureka County. A recent study identified a shortage of 137 units in White Pine County alone (White Pine County 2012b). In addition, temporary lodging such as hotels, motels, and RV parks in the analysis area routinely report being at full or near-full occupancy. The housing stock on the Duckwater Shoshone Reservation is sufficient to meet the needs of the Tribe's population; there were no vacant housing units on the Reservation as of September 2013, and only four vacant residential lots (Knight 2013).

The operations phase of the Proposed Action would result in an increased demand for housing in the affected area, most likely in either Ely or Eureka. In late 2013 and early 2014, houses, townhomes, and land were listed for sale and units were available to rent in the area. However, it is impossible to know the suitability of the available housing units in relation to the needs of operations personnel, and to project how many suitable housing units would be available for purchase or rent at the time operations personnel are moving into the affected area.

Housing on the Duckwater Shoshone Reservation is available and sufficient to meet the needs of tribal members living there. Given the location of the Reservation, its limited inventory of amenities, and its lack of available housing and residential lots, it is not anticipated that operations employees relocating to the analysis area would relocate to the Reservation unless they are members of the Shoshone Tribe who want to live on the Reservation. Any increased demand for housing would be addressed by the Tribe through available housing programs (Sanchez 2012).

Given the number of operations personnel who may relocate to the analysis area, the availability of residential building lots in the affected area, the current availability of housing units, and the reasonable expectation that the private sector would make more housing available in the analysis area in the near future to accommodate an increased demand, impacts to the housing resources in the affected area would be moderate during operation of the Proposed Action. Impacts would likely be realized in the first few years after project sanctioning as operations personnel are hired and begin relocating to the analysis area. The magnitude of impacts would be dependent to some extent on the status of other mining projects in the



affected area: the closing of the Ruby Hills mine may result in more housing becoming available as workers leave the area (or, housing demand associated with the Proposed Action would be reduced if these workers are hired for the Proposed Action); conversely, impacts may be magnified if other projects commence construction or operations in the same or similar timeframe. Impacts may be further mitigated by construction of housing specifically for employees: the Project Proponent has purchased residential lots in Ely that could, if needed, be built-out to provide employee housing.

### **Community Services**

Effects to community services are described in this section. Most community and public services (law enforcement and emergency response, fire protection, health and social services, water supply, solid waste, and education) would experience some increase in demand during either or both the construction and/or operation phases.

Impacts to community services are generally a function of population—increases in population usually result in increases in the demand for police and emergency services, increases in the need for social services, and increased demand for water and sewer and other public services. As discussed above, there is some uncertainty regarding from where the construction workforce would be sourced, and the number of construction workers that may be recruited from outside the analysis area: the potential shutdown of Barrick’s Ruby Hill Mine in Eureka, for example, could provide a ready and local source of labor. If a greater number of workers are sourced locally, the number of transient workers in the analysis area during construction would be reduced, and this would serve to reduce impacts to community services.

Because of the uncertainties regarding the source of construction and operations personnel, the descriptions below are based on the assumptions presented in the Population section above, and thus conservatively account for potential impacts.

### **Law Enforcement**

#### **Construction**

Increases in population generally result in increases in crime. The White Pine County Sheriff’s Office reports that increases in disturbances, fights and domestic calls have been realized during large construction projects in the past (Swetich 2013). Additional traffic along US 50 during construction may entail additional demands on law enforcement in response to motor vehicle accidents or additional safety patrols. While the demands for law enforcement services in Eureka, Ely, and other locations where transient construction workers would stay may increase during the construction phase as a result of the increased population, this increased demand will be short-lived, lasting only during the 6 to 9 month-long construction period. It is not anticipated that this increased demand would result in a significant impact to the provision of law enforcement services in the affected area. Note that it is not anticipated that law enforcement services provided by the Duckwater Shoshone Reservation’s Sheriff Department would increase during the construction phase, as no transient construction workers are anticipated to stay on the Reservation.

#### **Operations**

During operations, the increased permanent population in the affected area resulting from the relocation of operations personnel and their associated family members, and the presence of operations personnel who would stay in the analysis area during their work shifts, could result in a corresponding increase in the demand for law enforcement services. In addition, increased traffic on US 50 from Ely or Eureka to the mine site and on other roadways could require



increased traffic enforcement and accident response from law enforcement agencies in both White Pine and Eureka counties. The increased demand for law enforcement services would not result in a significant impact to the provision of law enforcement services in the affected area; impacts would be reduced/offset through the payment of state and local taxes by permanent operations personnel and the project proponent.

## **Fire Protection and Emergency Medical Services**

### **Construction**

Two types of incidents may result in impacts on fire and emergency medical services in the analysis area: frequent but low-magnitude events and infrequent but high-magnitude events (e.g., a large incident at the mine site). Low-magnitude events could result in greater impacts on local fire and emergency medical services due to their potential frequency; these impacts would be exacerbated because most local fire and emergency medical service providers are volunteers, and the distance from emergency providers to potential incident sites can be long, which could result in increased response times to non-mine worker related incidents. The potential frequency of these events would be reduced through the use of vans and buses to transport workers from either or both Ely and Eureka to the mine site. This shuttle system would reduce the volume of new traffic on US 50, and consequently the incidence of accidents.

A large incident at the mine site or a major accident is an example of a high-magnitude event. These high-magnitude events occur infrequently. Construction activities would be conducted in conformance with all MSHA safety regulations and applicable state and local regulations. Fire protection equipment and a fire protection plan would be established in accordance with State Fire Marshal standards. A fire suppression water system (sprinkler system) would be installed to provide service to the buildings as required by National Fire Protection Association and applicable building codes. Emergency response vehicles and a trained mine rescue team would respond to fire and medical emergencies at the site. Emergency response vehicles would be stationed at the safety/security building to respond to accidents and incidents. These vehicles would be staffed by mine employees certified to provide emergency fire and medical services for mining operations in the state of Nevada. A separate radio frequency would be established for emergency use, and emergency response and communication protocols with local fire and ambulance services would be established should external assistance be required. The implementation of these measures would ensure that high-magnitude events are also very low frequency events.

### **Operations**

The impacts on fire protection and emergency medical services during the operations phase of the Proposed Action would be the same as, or less than, the impacts during the construction phase. Impacts during the operations phase would be lessened due to the smaller number of workers associated with the operations phase compared to the construction phase.

## **Health Care and Social Services**

### **Construction**

Health care and emergency services are available at the William Bee Ririe Hospital & Rural Health Clinic (which includes an out-patient clinic) in Ely, the Eureka Medical Clinic in Eureka, and a medical clinic on the Duckwater Shoshone Reservation. Transient construction workers are most likely to use the facilities in Ely and Eureka for minor emergencies and urgent care, while seeking service in their home communities for elective and routine care. It is not anticipated that the transient construction workforce would use medical services on the



Duckwater Shoshone Reservation, as transient construction workers are not expected to reside on the Reservation.

Minor emergency services and urgent care needed by the construction workforce would be provided for at the mine site (a first-aid clinic and employees certified to provide emergency medical services would be available at the mine site), at the Eureka Medical Clinic, or at the William Bee Ririe Hospital & Rural Health Clinic. The project would operate in conformance with all MSHA safety regulations, and thus the need for minor emergency services and urgent care should be infrequent.

The availability of construction jobs could attract job seekers to the analysis area, some of whom may arrive with few resources. Social service providers in White Pine County and Eureka County could see an increase in indigent individuals seeking assistance during the construction phase. The workload of social services staff might increase during the construction period, resulting in diminished levels of service to the existing client base. These effects would likely diminish shortly after the construction period ends, as it is presumed that job seekers drawn to the analysis area would leave when construction positions are no longer available.

Impacts to the providers of medical and social services would be short-term, lasting generally only as long as the construction phase.

### **Operations**

The projected increase in population would result in a proportional increase in demand for health care services in the analysis area. Mine employees would have health insurance which would reimburse care providers for the cost of services. In addition, relocated workers who purchase or rent property in White Pine County would contribute (directly or indirectly) to the support of health care infrastructure in the county through the Hospital District levy. Workers who relocate to the area are likely to be relatively young, as would be their dependents; therefore, the intensity of health care required by the new population would be relatively slight and generally confined to preventative care.

Given the relatively high wages anticipated for operations personnel, the operations phase of the Proposed Action is not expected to increase the caseloads of social service providers in the area, or increase the demand for social services in the analysis area.

### **Water and Solid Waste**

#### **Construction**

There are no existing community water systems in the vicinity of the mine site. The mine would satisfy its water needs through wells located at the mine site. Adequate water rights have been secured to meet these needs and permits to appropriate water have been submitted to NDWR.

During construction, Midway expects that workers would stay in existing developed housing (hotels, motels, private residences, trailers, and apartments) and RV parks, which have established water supplies. The water supply and wastewater treatment systems in Ely and Eureka are both adequate to accommodate the existing population and foreseeable growth; therefore, a short-term increase in demand for water supplies and wastewater treatment during construction of the mine would occur.

As presented in Chapter 2, no waste from the project would be taken to the Whiskey Flats Landfill in Eureka County, or the Regional Landfill in White Pine County. Therefore, there would be no impacts to or on local solid waste facilities during construction.



## **Operations**

As presented in Chapter 3, the water supply and wastewater treatment systems in Eureka, Ely, and surrounding areas are sufficient to meet the current demands. Surplus capacity is available to meet the potential increased water and wastewater demands associated with a potential population increase. No additional water rights or public infrastructure would be needed to meet the potential increased demand. The water resources of the Duckwater Shoshone Reservation are adequate to serve existing needs of the Tribal population and to accommodate foreseeable growth. Few operations personnel are likely to relocate to the Reservation.

As presented in Chapter 2, no waste from the project would be taken to the Whiskey Flats Landfill in Eureka County, or the Regional Landfill in White Pine County. Therefore, there would be no impacts to or on local solid waste facilities during operations.

## **Education**

### **Construction**

Between 200 and 250 workers would commute to the analysis area at the peak of construction. Given the short construction period, it is anticipated that the majority of these workers would be transient, maintaining permanent residences elsewhere and traveling without families; therefore, any increased enrollment would be small. The White Pine County School District and the Eureka County School District schools that serve the affected area have adequate capacity in existing facilities, and thus no new infrastructure would need to be built.

### **Operations**

During operations, it is estimated that from 113 to 190 workers would relocate to the analysis area. Assuming an average family size of 3.14, this would result in up to 129 to 217 children relocating to the area. Any children of the operations employees expected to be hired from the local labor pool would already be enrolled in the local schools, or would be included in the school districts' enrollment planning, and thus there would be no impacts to local school districts from the hiring of these local employees.

As described in Section 3.18, the Eureka County School District and White Pine School District schools that serve the analysis area currently have sufficient capacity to accommodate this number of students. Operations workers relocating to the area would pay property, sales, and use taxes, some portion of which are used to fund school district operations and capital expenditure programs. Additionally, under the Nevada Plan, the State of Nevada may provide to the school districts additional funding on a per-student basis to offset the additional costs associated with the education of new students; in the 2014-2015 school year, the State provided \$7,315 per student to the White Pine County School District.

Due to the number and size of active mines in Eureka County, local sources of revenue are sufficiently large so that no per-student basic support payments have been made to the Eureka County School District by the State in recent years. If additional students enroll in the Eureka County School District, and local sources of revenue decline, the State would provide to the Eureka County School District a per-student basic support payment. Therefore, the costs associated with the education of new students who relocate to the districts would be offset to some degree.

## **Fiscal Impacts**

The estimates presented in this analysis are based on information provided by Midway for the nearby Pan Mine. Realized values described in this section would change over time as



commodity prices fluctuate. However, the estimates are a reasonable assessment of the tax revenues that would flow from the project.

### **Sales Tax Receipts**

The construction and the operation, maintenance, and abandonment phases of the mine would generate an increase in sales and use tax receipts. Purchases of equipment, supplies and construction materials needed by the Proposed Action would be subject to sales tax as would consumer purchases by the construction and operations workforces.

Detailed estimates of the taxable purchases made in the analysis area by the construction and operations workforces cannot be quantified at this time. Taxable purchases would be greater during construction due to the larger workforce, but sales tax receipts would be more predictable during operations as a larger percentage of the workforce would be resident within the analysis area. On average, each household in Nevada has a disposable income of \$34,313. During operations, the 190 households that may relocate to the analysis area represent approximately \$6.5 million of disposal income annually. Assuming this is spent in the analysis area, the counties stand to reap a minimum of approximately \$200,000 in sales tax receipts per year, depending on local and state tax rates. Sales tax receipts may be higher given the high average wage paid in the mining industry, and thus a higher likely disposable income per household associated with the project.

Midway estimated it would pay a total of \$15.1 million in sales and use tax during construction and operation of the Pan mine; because of the larger capital and operating expenses associated with the Proposed Action, larger sales and use taxes would be generated. It is estimated that Midway could pay approximately \$60 million in sales and use tax during construction and operation of the Proposed Action. Some portion of this amount would accrue to White Pine County and Eureka County school districts located in those counties, and other taxing entities in each county. Midway could also purchase some goods and services from businesses located on the Duckwater Shoshone Reservation.

### **Property Taxes**

Property taxes paid by the project would be a function of capital investments in plant and equipment, and would accrue to taxing entities located in White Pine County. Based on then-current tax rates, general property tax revenues from the Pan Mine Project were estimated in the project's EIS at \$9.8 million over the first eight years of operation. Given the larger capital investments associated with the Proposed Action, approximately \$39 million in tax revenues may accrue to taxing entities located in White Pine County from the development of the Gold Rock Mine.

As presented above in the housing discussion, there is an expectation that the market would respond to increased demand for housing and other services. New third-party residential and commercial developments built to meet these increased demands during construction and operation would also contribute to the area's tax base. In addition, any housing developed by the Project Proponent would contribute to the area's tax base. However, projections of such revenues cannot be reasonably quantified due to uncertainties regarding housing type, values, and location of the developments.

### **Net Proceeds Taxes**

Ad valorem taxes would be levied on the net proceeds of mining (NPM), which are a function of production, costs of recovery and processing, market prices and a variable tax rate. Projected NPM taxes over the life of the Pan mine were estimated in the EIS to range from \$18.1 million



over the life of the project (with an estimated \$13.3 million accruing to White Pine County) to \$28.9 million over the life of the project (with an estimated \$21.2 million accruing to White Pine County); these estimates are based on specific commodity prices and would change with fluctuations in the price of gold. The currently-identified resource at the Gold Rock Mine Project is smaller than that of the Pan mine; therefore, lesser NPM tax revenues would accrue.

### **Payments in Lieu of Taxes**

The proposed mine would be located on Federal land management by the BLM. Because there would be no transfer of federal land, there would be no effect on the amount of land used in estimating PILT for White Pine County; therefore, the Proposed Action would have no positive or negative impact on the PILT for White Pine County.

### **Increased Government Costs**

The permanent population increases associated with operation of the project could result in increased government outlays to provide public services (fire and emergency services, solid waste, etc.). Over time, the additional costs would be balanced by additional revenues from property and sales taxes, among other revenue sources. In the period immediately after individuals relocate to the area, however, the jurisdictions may accrue short-term costs prior to additional revenues being generated; the magnitude of the increased costs borne by the jurisdictions in the area would be proportional to the number of people who relocate to each jurisdiction. Due to the uncertainty regarding where relocated individuals will choose to reside, the location or magnitude of these costs cannot be determined. However, the costs would be realized only in the short-term.

### **Summary**

In summary, construction of the mine would have a positive, short-term fiscal effect on the entities within the analysis area through an increase in sales tax receipts. The operation and maintenance of the mine would also have a long-term (approximately 10 years), positive fiscal effect through an increase in property tax revenues and net proceeds taxes. This positive, long term effect would cease upon mine closure. The potential provision of housing by the proponent would serve to reduce housing-related impacts during the operations phase.

### ***4.18.4 Alternatives***

With the exception of the No Action Alternative, the socioeconomic-related impacts of the alternatives would be functionally identical to those impacts identified above for the Proposed Action.

Under the No Action Alternative, the Proposed Project would not be developed and neither the potential positive nor negative socioeconomic impacts identified previously would be realized. The area would remain available for future mineral development, recreational use, or for other purposes as approved by the BLM. There would be no beneficial impacts from the Proposed Project to employment, income or tax revenues, and there would be no adverse impacts to county services or facilities.

### ***4.18.5 Additional Monitoring and Mitigation***

No additional monitoring is required. No mitigation measures are required.



## **4.19 ENVIRONMENTAL JUSTICE**

This section presents an analysis of the potential environmental justice-related impacts associated with the construction and operation of the Proposed Action.

### ***4.19.1 Analysis Areas***

The analysis areas are the same areas used for socioeconomic resources (Section 4.18). The locations in the analysis area were selected for analysis as most of the construction and operations employees, as well as supporting industries, would be located in these areas. The Duckwater Shoshone Reservation was included as part of the analysis area as the community is within a reasonable commuting distance of the proposed mine site, and therefore a mine would provide a viable source of jobs for Duckwater Shoshone Reservation residents. Additionally, the analysis area includes the locales in which any potential impacts that have associated environmental justice concerns (e.g., air emissions, water supply and quality) would be realized. The Gold Rock Project Baseline Socioeconomic and Environmental Justice Conditions (BCLLC and SDLLC 2013) describes the distribution of minority and low-income populations in the analysis area.

### ***4.19.2 Indicators***

Indicators used to assess potential impacts to environmental justice communities include the following:

- Identification of minority or low-income populations affected disproportionately

The Proposed Action and Alternatives considered in this EIS were each analyzed for their potential to result in an adverse environmental justice-related impact. An alternative was considered to have an adverse impact on environmental justice if it would result in:

- Disproportionately high and adverse human health or environmental effects on minority populations or low-income populations;
- Increased risk or rate of exposure to an adverse environmental hazard by a minority population or low-income population that appreciably exceeds the risk or rate of exposure to the general population; or
- Health and safety hazards that disproportionately affect children.

The following factors were considered to determine whether the potential effects of an alternative are disproportionately high and adverse:

- Whether an impact would be likely on the natural or physical environment that significantly and adversely affects a minority population or low-income population; and
- Whether environmental effects would have a significant adverse impact on minority populations, low-income populations, or children that would appreciably exceed those on the general population.

Impacts relating to environmental justice were evaluated in terms of context; however, there is no standard set of criteria established for evaluating environmental justice impacts. The No Action Alternative would present no impacts to environmental justice; accordingly, the No Action Alternative was used as the basis of comparison for categorizing the potential impacts that could be realized from implementation of the other alternatives.



Impacts were analyzed in the context of the population residing within the analysis area, and in the context of the populations' use of the surrounding environment. Short-term and long-term impacts were analyzed.

### **4.19.3 Proposed Action**

#### **Potentially Disproportionately High and Adverse Human Health or Environmental Effects**

The area within the immediate vicinity of the Project Area is sparsely inhabited; residents of several scattered ranches represent the nearest permanent population. The Census Block in which the proposed mine site is unpopulated, as are the adjoining Census Blocks.

#### **Minority Populations**

The Guidance for Federal Agencies on Key Terms in Executive Order 12898 (Appendix A to Environmental Justice: Guidance Under the National Environmental Policy Act, Council on Environmental Quality 1997) defines notes that minority populations should be identified where either "the minority population of the affected area exceeds 50 percent" or where "the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis". As presented in Section 3.19, neither Eureka County nor White Pine County has a minority population that exceeds 50 percent of the total population. Additionally, the minority population percentage of both counties is not meaningfully greater than that of the State of Nevada as a whole.

The nearest population center to the Plan area is the town of Eureka, which is located approximately 28 air miles (approximately 50 road miles) northwest of the Plan area. As presented in Section 3.19, the minority population of the Eureka CDP does not constitute a majority of the population, and is not meaningfully greater than those of the counties of Eureka and White Pine as a whole. The next nearest population center is the City of Ely, which is located approximately 41 air miles (approximately 63 road miles) east of the Plan area. As presented in Section 3.19, the minority population of the City of Ely does not constitute a majority of the total population, and is not meaningfully greater than those of the counties of Eureka and White Pine as a whole. Therefore, the populations of Eureka County, White Pine County, the Eureka CDP, and the City of Ely are not considered minority populations per the conditions specified in the *Final Guidance for Incorporating Environmental Justice Concerns in EPA's NEPA Compliance Analyses* (EPA 1998).

The Ely Reservation is located on lands adjacent to the City of Ely; a majority of the population of the Ely Reservation (79 percent) identifies as American Indian and Alaska Native in whole or in part. The Duckwater Shoshone Reservation is located approximately 17 miles south of the Plan area; a majority of the population of the Duckwater Shoshone Reservation (78 percent) identifies as American Indian and Alaska Native in whole or in part. No traditional cultural properties or sacred sites have been identified within the project area or in area where they could be impacted by project activities. Additionally, no specific concerns about the Proposed Action have been raised by any of the Native American Tribes that were invited to enter into consultation. The area is known to be used by Native Americans for hunting; however, this use is not exclusive, nor is there an indication that Native American use of the area is conducted with more intensity than use by non-Native Americans.

As presented elsewhere in this EIS, all potential impacts to the natural and physical environment associated with or attributable to the Proposed Action would be less than



significant or mitigated to a less than significant level. Further, these potential impacts would generally be localized to the Plan area, and the potential effects would diminish as a function of distance. Given that the area immediately around the Plan area is uninhabited, that the nearest identified concentration of a minority population is the Duckwater Shoshone Reservation located approximately 17 miles south of the Plan area, that the Duckwater Shoshone Reservation is located generally upwind of the Plan area, and that the immediate vicinity of the Plan area is not known to be used intensively by Native Americans, construction and operations under the Proposed Action would result in no disproportionately high and adverse human health or environmental impacts to the populations of the Ely Reservation or Duckwater Shoshone Reservation. All potential impacts to the natural or physical environment associated with the Proposed Action would be borne by the populations of White Pine County and Eureka County approximately equally, without regard to race or ethnicity, and therefore no minority populations would realize any disproportionately high and adverse human health or environmental effects.

### **Low-Income Populations**

As presented in Section 3.19, the percentage of the populations of Eureka County and White Pine County identified as low income is lower than those of the state of Nevada as a whole. Additionally, there are no identified concentrations of low income populations.

Given that the area immediately around the Plan area is uninhabited, that the incidence of poverty in Eureka County and White Pine County are not meaningfully different than the incidence seen throughout Nevada, and that there are no identified concentrations of low income populations, construction and operations under the Proposed Action would result in no disproportionately high and adverse human health or environmental impacts to low income populations. All potential impacts to the natural or physical environment associated with the Proposed Action would be borne by the populations of White Pine County and Eureka County approximately equally, without regard to income, and therefore no low income populations would realize any disproportionately high and adverse human health or environmental effects.

### **Increased Risk or Rate of Exposure to an Adverse Environmental Hazard**

As stated above and shown elsewhere in this EIS, all potential impacts to the natural and physical environment associated with or attributable to the Proposed Action would be less than significant or mitigated to a less than significant level. Additionally, the distance between the proposed mine site and areas with large minority populations (in particular the Duckwater Shoshone Reservation) and the orientation of the proposed mine site and these areas (the proposed mine site is located downwind of the Duckwater Shoshone Reservation) would result in the dissipation or reduction of these less-than-significant potential impacts (e.g., impacts associated with the emission of air pollutants would diminish as the distance of the receptor from the proposed mine site increases). There are no identified practices or activities undertaken by Native Americans, other minority populations, or low-income populations that could result in an increased risk or rate of exposure to an adverse environmental hazard (for instance, reliance on harvested traditional or wild food sources). Therefore, there would be no impacts under these criteria.

### **Health and Safety Hazards that Disproportionately Affect Children**

Construction and operation of the proposed mine site components of the Proposed Action would occur in an uninhabited area and within a fenced, secured area; children would not normally be found at the mine site, and if present, would be escorted and supervised by mine personnel. As presented above, all potential impacts to the natural or physical environment associated with the



Proposed Action would be borne by the populations of White Pine County and Eureka County approximately equally. Therefore, the Proposed Action would not result in any health and safety hazards that would disproportionately affect children.

### **Proposed Action Impact Summary**

As presented above, there would be no disproportionately high and adverse effect on an identified minority or low-income population; no minority or low-income population would have an increased risk or rate of exposure to an adverse environmental hazard; and construction and operation of the Proposed Action would present no health or safety hazard that would disproportionately affect children. Therefore, no environmental justice-related impacts are anticipated.

#### ***4.19.4 Action Alternatives to the Proposed Action***

The Alternatives presented in Chapter 2 describe a number of alternatives for the power line routes, the main access route, the county road re-route, and relocation of the tailings storage facility. These alternatives are all located in close physical proximity to the proposed routes or facilities contained in the Proposed Action, and would be constructed and operated in manners similar to those described for the Proposed Action. As presented elsewhere, all potential impacts to the natural and physical environment associated with or attributable to the alternatives would be less than, or equivalent to, the potential impacts associated with the Proposed Action, and would be less than significant or mitigated to a less than significant level. Because their physical location would be similar to those of the Proposed Action, and because the potential impacts would be approximately equivalent to or less than those of the Proposed Action, the environmental justice-related impacts associated with these alternatives would be approximately equal to, or less than, those described above for the Proposed Action.

#### ***4.19.5 No Action Alternative***

As described in Chapter 2, the No Action Alternative would result in no new activities at the Project site. Therefore, the No Action Alternative would result in no impacts to the natural or human environment, and consequently would result in no environmental justice-related impacts.

#### ***4.19.6 Additional Monitoring and Mitigation***

No additional monitoring is required. No mitigation measures are required.

### **4.20 HAZARDOUS MATERIALS AND WASTES**

This section describes the potential impacts associated with hazardous materials and wastes under implementation of the Proposed Action and alternatives. Potential impacts associated with hazardous materials and wastes include exposure to hazardous materials in the event of a release or spill on roads located in Eureka County, primarily SR 278 and US 50.

#### ***4.20.1 Analysis Areas***

The Proposed Action direct effects analysis area is shown on Figure 3.15-2 and includes:

- The Plan area and second water supply well and infrastructure;
- Proposed Action power line corridor;



- The main access route; and
- Potential transportation routes to the Plan area from the following major hubs from which materials would be transported:
  - From Eureka via US 50 (Lincoln Highway) east;
  - From Ely via US 50 west; or
  - From Elko via I-80 east or from Utah via I-80 west to US 93, and south on US 93 or US 93A and US 93, respectively, to Ely, west on US 50.

The Northern Power Line Route Alternative direct effects analysis area is the Proposed Action analysis area with one modification:

- Inclusion of the Northern Power Line Route Alternative corridor, instead of the Proposed Action power line route corridor.

The Southern Power Line Route Alternative direct effects analysis area is the Proposed Action analysis area with one modification:

- Inclusion of the Southern Power Line Route Alternative corridor, instead of the Proposed Action power line route corridor.

The Northwest Main Access Route Alternative, Northern Power Line Route direct effects analysis area is the Proposed Action analysis area with three modifications:

- Inclusion of the Northern power line route alternative, instead of the Proposed Action power line route;
- Inclusion of the Northwest Main Access Route; and
- Minimization of Gold Rock Mine-related use of the main access route.

The Northwest Main Access Route Alternative, Southern Power Line Route direct effects analysis area is the Proposed Action analysis area with three modifications:

- Inclusion of the Southern power line route alternative, instead of the Proposed Action power line route;
- Inclusion of the Northwest Main Access Route; and
- Minimization of Gold Rock Mine-related use of the main access route.

The Modified County Road Re-Route Alternative direct effects analysis area is the same as the Proposed Action analysis area.

The Western Tailings Storage Facility Alternative direct effects analysis area is the same as the Proposed Action analysis area.

The No Action Alternative direct effects analysis area occurs within the approved, amended 2011 Exploration Plan area.



### **4.20.2 Indicators**

Indicators used to assess potential impacts associated with hazardous materials and wastes include the following:

- Hazardous materials inventory, SCERP, and other Applicant-Committed EPMs and controls to prevent or remediate releases or spills.

### **4.20.3 Proposed Action**

Compared to current conditions, implementation of the Proposed Action would result in increased amounts of fuels and hazardous substances transported, stored and used within the analysis area, along with additional quantities of hazardous and non-hazardous wastes generated. During construction and operation, maintenance and reclamation of the Proposed Action, fuels, hazardous materials and wastes would be transported, stored, and used in accordance with federal, state, and local regulations.

#### **Construction**

Under the Proposed Action, bulk chemicals and supplies would typically be transported to the site by trucks via US 50 and the existing main access route (Figure 3.15-2) from either the east (Ely) or west (Eureka) and the major connecting highways including Interstate 80 (I-80), US 93, and SR 278 (Figure 3.15-2).

The primary fuels and reagents that would be transported to and used on the mine are listed in Table 2.3-5. Table 2.3-5 also describes the number of expected shipments for reagents to the site. Within the Plan area, most reagents tanks would be located outside of the process facilities. Table 2.3-5 presents the reagents that would be used, the volumes that would be stored on site, and the number of shipments anticipated per month.

The potential for hazardous materials or other wastes to spill and subsequently affect surface water quality would be minimized through implementation of the Spill Contingency and Emergency Response Plan (Midway 2013a).

During construction, the largest quantities of materials to be used are hydrocarbon fuels (diesel and gasoline) and lubrication oil. By necessity, much of the fuel and lubricants would be transported directly to the work sites on public roads in relatively small tankers (6,000 gallons or less for fuel). Fuel and reagent storage facilities would include secondary containment which would hold 110 percent of the largest volume tank and if out of doors, additional capacity to hold the 100-year, 24-hour storm event.

The risk of a release would increase proportionate to the increased quantities of fuels, hazardous substances and wastes transported and stored within the analysis area, as well as proportional to the transport distances. Implementation of the management procedures and measures to prevent and contain releases as described in Sections 2.3.10, 2.3.14, 2.3.16, and 2.3.17 and compliance with regulatory requirements would minimize the likelihood of a spill or release and would facilitate quick response and remediation of inadvertent spills.

Inadvertent spills and releases of fuels and hazardous materials or wastes may occur. As described in Section 2.3.14, the existing SCERP outlines the procedures for handling and disposal of petroleum spills and wastes during construction activities, including spill or leak detection, spill response procedures (fuels and hazardous waste), spill cleanup procedures for on- and off-site incidents, and notification requirements. Compliance with the SCERP,



applicable government regulations, and the Applicant-Committed EPMs outlined in Table 2.3-8 would substantially reduce spill incidence and the risk of adverse impacts on the environment or exposure of the public. With implementation of timely spill response procedures, adverse impacts associated with accidental spills are expected to be temporary.

Waste management procedures are described in Section 2.3.12. Wastes would be managed in compliance with state and federal regulations and recycled or disposed of in existing, permitted facilities. Midway would institute a waste management plan that would identify the wastes generated at the site and their appropriate means of disposal. Non-hazardous industrial solid waste would be recycled or disposed of on-site in the waived Class III landfill that would be constructed as a trench within an active lift of the North WRDA. Sewage would be collected in portable sanitary facilities and removed by a contractor for off-site treatment and disposal at a permitted treatment facility. Midway anticipates that waste transport would occur monthly. With implementation of these management practices, environmental impacts associated with waste handling and transport would be similar to current conditions.

The mine is expected to be in the “large quantity generator” category as defined by the EPA (greater than 220 pounds or 100 kg per month). Used lubricants and solvents would be characterized according to the RCRA requirements and would be stored appropriately. Small quantities of hazardous waste would be stored according to state, federal, and local regulations. Trucks would transport small quantities of hazardous waste on an infrequent basis. Midway would use a licensed facility to ship wastes off-site for disposal.

Ground disturbances during construction have the potential for the unanticipated discovery of contaminated media, particularly petroleum-contaminated soil (PCS). The PCS Management Plan (SRK 2013) addresses accidental spills or leaks of hydrocarbons, including diesel fuel and hydraulic or lubrication oil. In the event that PCS is encountered during construction, PCS would be collected and disposed of off-site in accordance with federal, state, and local regulations.

### **Operations, Maintenance, and Reclamation**

During operations, maintenance, and reclamation under the Proposed Action, the management practices for hazardous materials and wastes and direct and indirect effects associated with the use of fuels and hazardous substances and generation of wastes would be the same as those described for construction. Process chemicals and fuel would be transported by truck along the highways in the region, and the existing main access route as shown on Figure 3.15-2. Trucks would transport small quantities of hazardous waste on an infrequent basis. Transporters would comply with all applicable state and federal regulations governing the transportation of hazardous materials and waste. Cyanide would arrive at the site as solid briquettes or liquid in NDOT-approved tote bins or tanker trucks and off-loaded from the truck in the secure reagent area. Management of all operations utilizing cyanide would be in accordance with the BLM Nevada Cyanide Management Plan (BLM 1991). Impacts associated with the use of fuels and hazardous materials and generation and disposal of wastes would be similar to those described for construction.

### **Probability of a Release**

The Proposed Action would require transport to the Plan area of the chemicals and quantities described in Table 2.3-5. Process chemicals, fuel, and waste materials could be accidentally released during transport to and from the Plan area.



The probability of a truck accident involving hazardous materials was analyzed using national accident statistics for truck shipments of hazardous materials (FMCSA 2001). The primary emphasis in this analysis has been placed upon the release of liquid material that could pose an immediate human health hazard or an off-site contaminant hazard. The estimated deliveries of off-road diesel fuel, sodium cyanide, sodium hydroxide, and hydrochloric acid have therefore been included in this analysis, as the other chemicals that would be used in large quantities are solids, not liquids.

The probability of a truck accident that would result in the release of the selected hazardous materials was calculated using the national rate of releases per mile traveled. Two main travel route distances were assumed for this analysis:

- 164 miles for the Elko/Eureka route, and
- 63 miles for the Ely route.

The assumed life-of-mine truck deliveries are as follows: off-road diesel fuel – 3,528; and hydrochloric acid – 156. The release probability was calculated over a mine life of 10 years.

Table 4.20-1 shows the release probability information calculated for both travel routes. A majority of the chemicals would potentially be transported from Elko, based on the railroad hubs located in Elko, as well as the numerous active mines in the Elko area.

The analysis shows that the probability of a release for each chemical would be as follows: diesel fuel – probability of 227 in 1,000 for the Elko/Eureka route and 105 in 1,000 for the Ely route; sodium cyanide - probability of 18 in 1,000 for the Elko/Eureka route and 8 in 1,000 for the Ely route; sodium hydroxide - probability of 2 in 1,000 for the Elko/Eureka route and 1 in 1,000 for the Ely route; and hydrochloric acid – probability of 3 in 1,000 for the Elko/Eureka route and 1 in 1,000 for the Ely route. These results indicate a relatively high probability of an accidental release of diesel fuel, but a low probability of an accidental release of sodium cyanide, sodium hydroxide, and hydrochloric acid to the environment during the estimated life of the Proposed Action. National accident statistics for flammable and combustible materials (diesel fuel) indicate a higher incident of release per mile of travel than the other categories used in this analysis. Based upon the small quantities of hazardous waste that would be generated by the Proposed Action, an accident resulting in a release to the environment during off-site transport is not anticipated.

**Table 4.20-1 Hazardous Material National Accident Rate per Mile**

Hazardous Material Category	Hazmat Miles	Total Hazmat Accidents	Hazmat Accident Rate Accident/Mile
3 – Flammable & Combustible	2,778,000,000	1,379.02	4.96E-07
6.1- Toxic	218,000,000	50.00	2.30E-07
8 – Corrosive	1,945,000,000	257.00	1.32E-07

Source: FMCSA 2011



**Table 4.20-2 Hazardous Material Probability of Transportation Release**

Hazardous Material	Number of LOM Truck Deliveries	Loaded Truck Haul Distance per Trip	Accidents Per Mile <sup>1</sup>	Release Probability
Diesel Fuel (3)	3,528	164 Elko/Eureka	4.96E-07	0.22749
		63 Ely		0.10499
Sodium Cyanide (6.1)	600	164 Elko/Eureka	2.30E-07	0.01794
		63 Ely		0.00828
Sodium Hydroxide (8)	96	164 Elko/Eureka	1.32E-07	0.00165
		63Ely		0.00076
Hydrochloric Acid (8)	156	164 Elko/Eureka	1.32E-07	0.00268
		63 Ely		0.00124

Notes:

1 The rate is based upon the Hazardous Material Category of the Chemical shown in Table 4.20-1.

### Effects of a Release

The environmental effects of a release would depend on the substance, quantity, timing, and location of the release. The potential for off-site releases during transportation is calculated for hazardous substances only and does not indicate a volume or location. The event could range from a minor oil spill contained within the Plan area, where cleanup equipment would be readily available, to a large fuel or chemical spill during transportation. Some of the chemicals could have immediate adverse effects on water quality and aquatic resources if a spill were to enter a flowing stream or wetland area. Considering the transport routes, the probability of a spill of these materials impacting a wetland or other waterway is possible, though not very likely.

Hydrochloric acid spills which occur on the ground or in water would have the potential to impact local populations of aquatic and terrestrial life through the oxidizing action which destroys plant and animal cells. An acid spill into a waterway would have the potential to migrate from the initial spill site. Timely response to spills and subsequent cleanup actions would minimize the potential for long-term damage to the environment.

A release of diesel fuel to the ground surface would have the potential to impact vegetation and could ignite, causing a range fire. A spill into a waterway would cause contamination of water and soil, likely affecting local aquatic populations. Compliance with the SCERP, applicable government regulations, and the Applicant-Committed EPMs outlined in Table 2.3-8 would substantially reduce spill incidence and the risk of adverse impacts on the environment or exposure of the public. With implementation of timely spill response procedures, adverse impacts associated with inadvertent fuel spills are expected to be temporary.

### Public Safety

The Proposed Action would operate in conformance with all MSHA safety regulations (30 CFR Parts 1-199). Site access would be restricted to employees and authorized visitors. Public access to the active mining areas would be restricted by a perimeter fence with a security gatehouse and locked gates or other physical control methods. Midway would restrict public access to existing roads that cross active mining areas in the Plan area boundary in accordance with MSHA requirements. Public access would be controlled through the security gatehouse; a fence would be installed on the perimeter of the mine area with locked gates or other physical control methods.



Potential impacts to public health and safety would include health effects associated with noise, vehicle air emissions and fugitive dust associated with increased vehicular traffic, increased risk of traffic accidents on public roads, and exposure to inadvertent spills of fuels or chemicals. Impacts to public health and safety associated with the noise, vehicle air emissions, and fugitive dust are analyzed in Section 4.7, Air Quality.

Traffic control measures would be implemented to minimize impacts to public travel, including posting speed limit signs on the existing main access route and on other roads throughout the Plan area and enforcing speed limits. Impacts associated with project-related traffic are analyzed in Section 4.15, Land Use Authorizations and Access.

For public safety after the completion of active mining, closure of the pit would include construction of permanent barriers or berms, where constructible, outside of the anticipated pit wall ravel perimeter to limit public access to pit highwalls. In-pit haul roads would be blocked with rock or soil berms unless the BLM identifies a post-mining use for such roads and except as required temporarily to access monitoring points.

Impacts to public health and safety could arise from a large-scale release of fuels or chemicals. The location of the release would again be a primary factor in determining its importance. However, the probability of a large-scale release is low. In the event of a release during transport, the commercial transportation company would be responsible for first response and cleanup. Local and regional law enforcement and fire protection agencies also may be involved to secure the site and protect public safety. In the event of an accident involving hazardous substances, the carrier must notify local emergency response personnel as described in Section 3.20. The release of a reportable quantity of a hazardous substance must be reported to the appropriate state and federal agencies within the specified time frames. The SCERP Plan includes procedures for the response of mine resources to off-site transportation hazardous material releases if requested by an agency; however, Midway anticipates that local and regional agencies would maintain sole responsibility for response to incidents outside of the Plan area. Oil spills must be reported to the EPA National Response Center.

Compliance with the SCERP, applicable government regulations, and the Applicant-Committed EPMs outlined in Table 2.3-8 would substantially reduce the risk of a large-scale release and minimize the potential for exposure of the public. No adverse impacts to public safety are anticipated.

#### ***4.20.4 Northern Power Line Route Alternative***

The management practices for hazardous materials and wastes for this alternative would be similar to those described for the Proposed Action. Although the Northern Power Line Route Alternative would have a different footprint, direct and indirect effects associated with the use of fuels and hazardous substances and generation of wastes would be the same as those described for the Proposed Action. With implementation of the Applicant-Committed EPMs described in Table 2.3-8, an accident resulting in a release to the environment is not anticipated.

#### ***4.20.5 Southern Power Line Route Alternative***

The management practices for hazardous materials and wastes for this alternative would be similar to those described for the Proposed Action. Although the Southern Power Line Route Alternative would have a different footprint, direct and indirect effects associated with the use of fuels and hazardous substances and generation of wastes would be similar to those described



for the Proposed Action. With implementation of the Applicant-Committed EPMs described in Table 2.3-8, an accident resulting in a release to the environment is not anticipated.

#### ***4.20.6 Northwest Main Access Route Alternative, Northern Power Line Route***

Under this alternative, bulk shipments of hazardous materials and wastes would travel a different route from the Plan area to US 50. Instead of using the existing main access route for commercial truck traffic and employees traveling from US 50, mine-bound commercial truck and employee traffic would be directed to follow the Northwest Main Access Route Alternative, Northern Power Line Route (Figure 2.4-2) to reach the Gold Rock Mine. As part of this alternative, existing segments of the selected route would be upgraded and proposed segments would be constructed to accommodate commercial trucks.

The management practices for hazardous materials and wastes for this alternative would be the same as those described for the Proposed Action. Although this alternative would have a different footprint than the Proposed Action, direct and indirect effects associated with the use of fuels and hazardous substances and generation of wastes would be similar to those described for the Proposed Action. With implementation of the Applicant-Committed EPMs described in Table 2.3-8, an accident resulting in a release to the environment is not anticipated.

#### ***4.20.7 Northwest Main Access Route Alternative, Southern Power Line Route***

Under this alternative, bulk shipments of hazardous materials and wastes would travel a different route from the Plan area to US 50. Instead of using the existing main access route for commercial truck traffic and employees traveling from US 50, mine-bound commercial truck and employee traffic would be directed to follow the Northwest Main Access Route Alternative, Southern Power Line Route (Figure 2.4-2) to reach the Gold Rock Mine. As part of this alternative, existing segments of the selected route would be upgraded and proposed segments would be constructed to accommodate commercial trucks.

The management practices for hazardous materials and wastes for this alternative would be the same as those described for the Proposed Action. Although this alternative would have a different footprint than the Proposed Action, direct and indirect effects associated with the use of fuels and hazardous substances and generation of wastes would be similar to those described for the Proposed Action. With implementation of the Applicant-Committed EPMs described in Table 2.3-8, an accident resulting in a release to the environment is not anticipated.

#### ***4.20.8 Modified County Road Re-Route Alternative***

Under this alternative, the county road re-route would have a different footprint; however, bulk chemicals and supplies would typically be transported to the site by trucks via the main access route (Figure 3.15-2) as described for the Proposed Action. The management practices for hazardous materials and wastes and direct and indirect effects associated with the use of fuels and hazardous substances and generation of wastes would be the same as those described for the Proposed Action. With implementation of the Applicant-Committed EPMs described in Table 2.3-8, an accident resulting in a release to the environment is not anticipated.

#### ***4.20.9 Western Tailings Storage Facility Alternative***

Relative to the Proposed Action, there would be approximately 118 fewer acres of short-term disturbance under this alternative. Although less acreage would be affected, construction,



operations, maintenance and reclamation under this alternative would result in the same type and intensity of impacts as those described for the Proposed Action. The types of wastes managed and the applicable management practices applied for the Western Tailings Storage Facility Alternative would be similar to those described for the Proposed Action. The environmental impacts of these practices for this alternative would therefore be the same as those described the Proposed Action. With implementation of the Applicant-Committed EPMS described in Table 2.3-8, an accident resulting in a release to the environment is not anticipated.

#### ***4.20.10 No Action Alternative***

Under the No Action Alternative, the Proposed Action would not be constructed and there would be no associated project-related impacts associated with hazardous materials or wastes. Hazardous materials would continue to be used and wastes generated by exploration activities at rates similar to current conditions. The proposed project facilities would not being constructed or operated, and therefore, no additional hazardous materials would be used in the Plan area and no additional solid or hazardous wastes would be generated.

#### ***4.20.11 Additional Monitoring and Mitigation***

No additional monitoring is required. No mitigation measures are required.

### **4.21 UNAVOIDABLE ADVERSE IMPACTS**

Unavoidable impacts could occur by implementing any of the action alternatives. Some of these impacts would be short term, whereas others could be long term. These unavoidable impacts, which have been described earlier, could include:

#### ***4.21.1 Water Resources***

Unavoidable impacts to water resources would be unlikely to occur as a result of surface disturbance associated with the Proposed Action. Water use would be limited relative to water availability. The implementation of Applicant-Committed EPMS in Table 2.3-8 would minimize potential degradation of surface water and groundwater quality.

#### ***4.21.2 Geology and Minerals***

Local geologic and mineral resources would be unavoidably impacted through the excavation and removal, as anticipated by the 1872 Mining Law, of ore and waste rock and, to a lesser extent, by construction of support facilities under all alternatives except the No Action Alternative.

#### ***4.21.3 Paleontological Resources***

Unavoidable impacts to paleontological resources may occur during excavation of the pit and topsoil stripping in the surface facilities area and would be long term. Excavation and curation of any significant fossils encountered during construction or operation under any of the action alternatives would decrease the potential for adverse impacts to scientifically significant paleontological resources, but cannot guarantee that all adverse impacts would be avoided.

#### ***4.21.4 Soils***

Under the Proposed Action and Modified County Road Re-Route Alternative, approximately 3,946 acres of native soil conditions would be directly impacted during multiple phases of the project. Unavoidable adverse impacts would include destruction of natural soil structures and



microbiotic crusts, microorganisms, and discontinuation of soil development. Implementation of reclamation (section 3.16) would replace soils as growth media for revegetation.

Under the Northern Power Line Route Alternative, unavoidable adverse impacts to soils would be similar to those identified for the Proposed Action, except that implementation of this alternative would result in 33 fewer acres of disturbance.

Under the Southern Power Line Route Alternative, unavoidable adverse impacts to soils would be similar to those identified for the Proposed Action, except that implementation of this alternative would result in 34 fewer acres of disturbance.

Under the Northwest Main Access Route Alternative, Northern Power Line Route, unavoidable adverse impacts to soils would be similar to those identified for the Proposed Action, except that implementation of this alternative would result in 64 greater acres of disturbance.

Under the Northwest Main Access Route Alternative, Southern Power Line Route, unavoidable adverse impacts to soils would be similar to those identified for the Proposed Action, except that implementation of this alternative would result in 72 greater acres of disturbance.

Under the Western Tailings Storage Facility Alternative, unavoidable adverse impacts to soils would be similar to those identified for the Proposed Action, except that implementation of this alternative would result in 118 fewer acres of disturbance.

#### ***4.21.5 Prime and Unique Farmlands***

Unavoidable adverse impacts under the Proposed Action, Modified County Road Re-Route Alternative, and Western Tailings Storage Facility Alternative would include approximately 3 acres of temporary disturbances to Prime Farmlands during construction of the proposed power line and associated maintenance road and during ongoing exploration activities.

Under the Northern and Southern power line route alternatives, unavoidable adverse impacts to soils would be similar to those identified for the Proposed Action, except that implementation of this alternative would result in approximately 2 fewer acres of disturbance.

Under the Northwest Main Access Route Alternative, Northern and Southern power line routes, unavoidable adverse impacts to soils would be similar to those identified for the Proposed Action, except that implementation of this alternative would result in up to approximately 12 greater acres of disturbance.

#### ***4.21.6 Air Resources***

Under all action alternatives, unavoidable adverse impacts to ambient air quality would include fugitive dust emissions from construction and operation and combustion gases from generators and vehicles. These emissions would be long term over the life of the project.

#### ***4.21.7 Vegetation Including Noxious and Non-Native, Invasive Weeds and Special Status Plants***

##### **Vegetation**

Under all action alternatives except the Western Tailings Storage Facility Alternative, long-term disturbance of existing vegetation communities would result in unavoidable adverse impacts of up to approximately 491 acres of vegetation. Long-term disturbance could create conditions favorable to erosion and the establishment of noxious weeds and other invasive, non-native species.



Under the Western Tailings Storage Facility Alternative, long-term disturbance of existing vegetation communities would be similar to those under the other action alternatives, except that unavoidable adverse impacts would occur to approximately 38 fewer acres of vegetation.

### **Noxious and Non-Native, Invasive Weeds**

Disturbance activities during the life of the project would create conditions favorable to the establishment of noxious and non-native, invasive weeds.

### **Special Status Plants**

The establishment of noxious weeds could create unfavorable habitat conditions for any special status species in nearby, undisturbed habitat; however, no special status species were reported within the analysis area.

## ***4.21.8 Wildlife Resources, Including Migratory Birds and Special Status Wildlife***

Implementation of any of the action alternatives would permanently impact wildlife habitat in the project area. Under all of the action alternatives except the Western Tailings Storage Facility, a long-term loss of approximately 491 acres of wildlife habitat would result from unreclaimed portions of the Proposed Action, including the 367-acre pit, 13-acre ET cell, 82 acres of stormwater controls and sediment basins, and up to 29 acres associated with the proposed county road re-route. However, this change, and in some cases loss, of habitat would be small compared to the available undisturbed wildlife habitat in the project area.

Under the Western Tailings Storage Facility Alternative, unavoidable adverse impacts would be similar to those under other alternatives except that 38 fewer acres of long-term disturbance would occur under this alternative.

Some short-term unavoidable adverse effects on wildlife populations would potentially occur as a result of mortalities during construction and operation activities. No direct take of federally threatened or endangered species or their habitat is anticipated under any of the action alternatives.

## ***4.21.9 Range Resources***

Implementation of any of the action alternatives would result in a loss of rangeland available to livestock for grazing. Reclamation of disturbed land can result in poorer vegetation productivity than the native rangeland. In areas that are already degraded by noxious and invasive, non-native weeds, seeding efforts completed for disturbed areas could result in improved forage values.

## ***4.21.10 Forest Products and Fuels***

Unavoidable adverse impacts to forest products and fuels could occur due to long-term disturbance of existing forested areas (Tables 4.11-1, 4.11-2). Long-term disturbance could create conditions favorable to erosion and the establishment of noxious weeds and other invasive, non-native species which could impact the establishment of woodlands. Reestablishment of disturbed forest communities could take 75 to 100 years (Barney and Frischknecht 1974). Available fuels would be reduced, however this is not expected to be an overall adverse effect due to documented increased fuel load throughout portions of the Great Basin (Miller et al. 2001).



#### **4.21.11 Wild Horses**

Implementation of all of the action alternatives would result in unavoidable, short-term adverse direct effects to wild horse habitat as a result of the loss of access to available forage within the fenced mine area for the life of the mine. Under all action alternatives except the Western Tailings Storage Facility Alternative, an 8,757-acre fenced area would be lost from access. Under the Western Tailings Storage Facility Alternative, a 7,049-acre fenced area (1,708 acres smaller than the other alternatives) would be lost from access. Following removal of the fence and successful reclamation, most of the disturbance areas would be available for wild horses to resume grazing; however, reclamation of disturbed land can result in poorer vegetation productivity than the native rangeland. In areas already degraded by weeds, reclamation efforts could result in improved forage values following closure of the mine.

Unavoidable short-term, adverse indirect effects to wild horse habitat adjacent to the active mining areas and the main access road could include noise, vehicular traffic, and dust generated by the project-related vehicles and equipment, primarily during construction-related activities within the Plan area.

Under all alternatives except the Western Tailings Storage Facility, long-term disturbance would result in a long-term impact to approximately 491 acres of horse habitat. Under the Western Tailings Storage Facility Alternative, long-term disturbance would occur on 38 fewer acres of horse habitat.

#### **4.21.12 Cultural Resources**

Unavoidable or residual adverse impacts to NRHP-eligible historic properties may include physical damage, loss of key features, loss of important cultural information, or loss of integrity for the resource or its historic setting. If a historic property cannot be avoided an approved treatment plan would be developed and implemented.

#### **4.21.13 Native American Religious and Traditional Values**

No unavoidable adverse impacts to Native American religious and traditional values have been identified for any of the action alternatives.

#### **4.21.14 Land Use Authorization and Access**

Unavoidable adverse impacts on land use, authorization, and access would include restricting public access for the life of the mine and any permanent or un-reclaimed disturbance areas created during mining activities. The project would result in unavoidable, short-term increased traffic on public roads with proportionate increase in risk of traffic accidents and accelerated road degradation.

#### **4.21.15 Visual Resources**

During construction and operation unavoidable adverse direct effects to visual resources on BLM-administered land would include visual intrusion of mine-related vehicles, equipment and personnel, and fugitive dust associated with disturbed areas. Mine-related components and facilities would be visible from one or more KOPs during construction and operation of the project. The visibility of these components is unavoidable; however, the proposed project components would conform to the management objectives of VRM Class IV.



#### **4.21.16 Recreation**

The project would result in unavoidable, short-term and long-term adverse direct effects to recreational resources as a result of the displacement of the fenced portion of the Plan area for the life of the mine. Under all action alternatives except the Western Tailings Storage Facility Alternative, 8,757-acres would be fenced. Under the Western Tailings Storage Facility Alternative, 1,708 fewer acres would be fenced.

Unavoidable short-term, adverse indirect effects which could affect the quality of the recreational experience would include noise, vehicular traffic, and dust generated by the project-related vehicles and equipment, primarily during construction.

#### **4.21.17 Socioeconomic Resources**

During the construction phase, the analysis area would realize a short-term population increase due to the temporary in-migration of transient construction workers to the analysis area. This short-term increase in population may result in stresses to the local housing market, including increased rental rates and a reduction in the number of available rental properties in the analysis area. These impacts could be adverse to some individuals in the analysis area, and would be unavoidable. The temporary impacts caused by the small increase in population would cease following completion of construction. Potential increases in rental rates may occur.

The operations phase would not result in any adverse impacts on socioeconomic resources. The small increase in population would not be adverse, and the housing demands of the 35 operations personnel who would relocate to the analysis area could be met either by the market or by the Project Proponent (if the provision of housing is deemed necessary to attract and retain the desired workforce). The increased employment offered by the project would not be adverse, and the additional burden on public services would be accounted for through the payment of taxes (sales, property) or the payment of fees for service (water, sewer). Therefore, there would be no unavoidable adverse impacts as a result of the operations phase.

#### **4.21.18 Environmental Justice**

No unavoidable disproportionate adverse impacts on minority or low-income populations, or on children, have been identified for any of the action alternatives.

#### **4.21.19 Hazardous Materials and Wastes**

The unavoidable adverse impacts associated with the Proposed Action would be that wastes generated by the project would consume some capacity of the on-site Class III landfill and some capacities of off-site waste management facilities.

### **4.22 IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES**

Irreversible and irretrievable commitments of resources could occur under any of the action alternatives. Irreversible and irretrievable resource commitments are related to the use of nonrenewable and renewable resources and the effects that the uses of these resources have on future generations. The commitment of resources refers primarily to the use of nonrenewable resources such as fossil fuels, water, labor, and electricity. Renewable resources are included in this analysis due to their importance to the project region's natural resources. Irreversible effects



primarily result from the use or loss of a specific resource that cannot be replaced within a reasonable time frame. Irreversible commitment of resources addresses the potential loss of future options for resource development or management, especially of nonrenewable resources such as minerals or cultural resources. These irreversible and irretrievable commitments of resources, which have been described earlier, could include:

#### ***4.22.1 Water Resources***

Groundwater uses during construction and operations of the project under all of the action alternatives would represent an irretrievable commitment of the resource for all action alternatives. No irreversible impacts are anticipated from the proposed project.

#### ***4.22.2 Geology and Minerals***

Extraction and processing of ore from the Gold Rock pit as anticipated by the 1872 Mining Law would represent an irreversible and irretrievable commitment of mineral resources. The alteration of the overburden is irreversible. These impacts would be the same under all action alternatives.

#### ***4.22.3 Paleontological Resources***

No paleontological resources have been identified in the analysis area, and low potential exists for meaningful paleontological resources in the analysis area; therefore, no irreversible or irretrievable commitments of paleontological resources would occur.

#### ***4.22.4 Soils***

Permanent loss of soils within the pit would represent an irreversible commitment of soil resources. Soil resources would be irretrievably committed to reclamation during soil salvage and reclamation activities. Restoration of soil characteristics such as soil structures, infiltration, and water-holding capacity would gradually return through natural soil development processes.

#### ***4.22.5 Prime and Unique Farmlands***

No irreversible and/or irretrievable commitments of Prime Farmlands would occur as a result of any of the action alternatives.

#### ***4.22.6 Air Resources***

No irreversible and/or irretrievable commitments of air resources would occur as a result of any of the action alternatives.

#### ***4.22.7 Vegetation Including Noxious and Non-Native, Invasive Weeds and Special Status Plants***

##### **Vegetation**

There would be an irretrievable commitment of vegetation resources during the life of the project; vegetation resources would return to reclaimed areas. Permanent disturbance from the mine facilities not subject to reclamation would constitute an irreversible commitment of those vegetation resources. The 367-acre pit would be a permanent loss under all alternatives.



Under all alternatives except the Western Tailings Storage Facility Alternative, an additional 124 acres of long-term disturbance would not be reclaimed. Although these areas would not be actively reclaimed, natural reclamation of vegetation species likely would occur over time, resulting in establishment of vegetation. Under the Western Tailings Storage Facility Alternative, 38 fewer acres of long-term disturbance would remain unreclaimed.

### **Noxious and Non-Native Invasive Weeds**

Most vegetation resources disturbed during construction, operation, and closure would be reclaimed concurrently and following closure of the project. Long-term disturbance would impact up to 491 acres of vegetation. Short-term and long-term disturbance activities would create conditions favorable to the establishment of noxious and non-native, invasive weeds.

### **Special Status Plant Species**

No irreversible and/or irretrievable commitment of resources would occur due to the fact that no special status plants were identified in the analysis areas.

#### ***4.22.8 Wildlife Resources, Including Migratory Birds and Special Status Wildlife***

Both protected and general wildlife species within the analysis area may be subject to irreversible and/or irretrievable commitment of resource with regard to the following types of disturbance: excessive noise; increased human disturbance, habitat loss and fragmentation; and increased roads and vehicle traffic, for the life of the project in disturbed areas and for the long-term in areas that will not be reclaimed.

#### ***4.22.9 Range Resources***

The project would result in a long-term commitment of rangeland resources that would no longer be available to livestock. The 367-acre pit would be a permanent loss under any of the action alternatives. Under all alternatives except the Western Tailings Storage Facility Alternative, an additional 124 acres of long-term disturbance would not be reclaimed. Although these areas would not be actively reclaimed, natural reclamation of vegetation species likely would occur over time, resulting in establishment of vegetation. Under the Western Tailings Storage Facility Alternative, 38 fewer acres of long-term disturbance would remain unreclaimed.

#### ***4.22.10 Forest Products and Fuels***

An irretrievable commitment of forest product resources would occur during the life of the project (Table 4.11-1). Forestry products in unreclaimed areas would be irretrievably committed as a result of the development of the mine.

Fuels resources would be unreclaimed following closure of the project (Table 4.11-2). These long-term disturbances represent irreversible and irretrievable commitments of fuel resources.

#### ***4.22.11 Wild Horses***

The project would result in irreversible and irretrievable commitment of wild horse habitat that would not be subject to reclamation. Under all alternatives, the pit represents a permanent loss of 367 acres of wild horse habitat.



Under all alternatives except the Western Tailings Storage Facility Alternative, an additional 124 acres of long-term disturbance would not be reclaimed. Although these areas would not be actively reclaimed, natural reclamation of vegetation species likely would occur over time, resulting in establishment of vegetation. Under the Western Tailings Storage Facility Alternative, 38 fewer acres of long-term disturbance would remain unreclaimed.

#### ***4.22.12 Cultural Resources***

Cultural resources are non-renewable resources, and any adverse effect would be permanent, i.e., irreversible and irretrievable. Mitigation of impacts by data recovery would also be an irreversible commitment of resources.

#### ***4.22.13 Native American Religious and Traditional Values***

Any damage to or loss of Native American religious and traditional values would be an irreversible and irretrievable commitment of non-renewable resources.

#### ***4.22.14 Land Use Authorization and Access***

The irreversible and irretrievable commitments under the Proposed Action would include a long-term loss of BLM land that would not be accessible to the public. Under all action alternatives the 367-acre pit would be a permanent loss. Under all alternatives except the Western Tailings Storage Facility Alternative, an additional 124 acres of long-term disturbance would not be reclaimed. Although these areas would not be actively reclaimed, natural reclamation of vegetation species likely would occur over time, resulting in establishment of vegetation. Under the Western Tailings Storage Facility Alternative, 38 fewer acres of long-term disturbance would remain unreclaimed.

#### ***4.22.15 Visual Resources***

The form, line, color, and texture elements created by the proposed mining pit that would remain open after reclamation of the proposed project would represent irreversible and irretrievable commitment of visual resources. However, the mining pit would not be visible from any of the KOPs based on the visual simulations. Reclamation of some project components, such as the waste rock disposal site and the heap leach pad would lessen the contrast these components would have, but not eliminate the contrast entirely.

#### ***4.22.16 Recreation***

Irreversible and irretrievable commitments of recreation resources would not be expected as a result of any of the action alternatives.

#### ***4.22.17 Socioeconomic Resources***

The social and economic structure of the communities in the analysis areas have, in large part, been formed as a result of cyclical increases and decreases in mining activities. Under the Proposed Action, there would be no irreversible or irretrievable impacts to the social and economic structure of White Pine and Eureka counties or the community of Duckwater.

#### ***4.22.18 Environmental Justice***

There would be no irreversible and irretrievable commitments of resources for any of the project alternatives.



#### **4.22.19 Hazardous Materials and Wastes**

Non-hazardous industrial solid waste would be recycled or disposed of on-site in the waived Class III landfill. Other wastes produced during construction and operation of the proposed facilities would be disposed of off-site in existing permitted facilities and would permanently consume some of the waste storage capacity at those facilities.

### **4.23 RELATIONSHIP OF SHORT-TERM USES AND LONG-TERM PRODUCTIVITY**

Short-term uses are those that generally occur on a year-to-year basis. Examples are wildlife use of forage, timber management, recreation, and uses of water resources. Long-term productivity is the capability of the land to provide resources, both market and non-market, for future generations. Short-term use and long-term productivity could occur under any of the action alternatives and could include:

#### **4.23.1 Water Resources**

Groundwater uses during construction and operations of the project under all of the action alternatives would not limit other uses of groundwater in the project area. The relationship of short-term uses and long-term productivity would be affected by the project.

#### **4.23.2 Geology and Minerals**

From construction through reclamation, geologic and mineral resources would be used over a period of 13 years, which is considered a short-term use. Long-term productivity of these resources would be directly affected by their removal; however, additional resources may be identified during mining which could facilitate long-term productivity of these resources.

#### **4.23.3 Paleontological Resources**

No meaningful, short-term uses of paleontological resources would occur under any of the action alternatives; therefore, no effects to long-term capability of geologic units to produce fossils would occur.

#### **4.23.4 Soils**

Short-term stockpiling of soils would enable the reclamation of disturbed areas, thereby minimizing adverse effects on long-term productivity under all of the action alternatives. Unreclaimed areas such as the pit would be eliminated from long-term productivity.

#### **4.23.5 Prime and Unique Farmlands**

Disturbance of Prime Farmlands would be affected during the life of the project. This disturbance would prohibit short-term use of these lands, but reclamation of the disturbance would restore long-term productivity of these lands. Surface disturbance activities under the Proposed Action, Modified County Road Re-Route Alternative, and Western Tailings Storage Facility Alternative would result in approximately 3 acres of short-term disturbances to Prime Farmlands during construction of the proposed power line and associated maintenance road and during ongoing exploration activities.



Under the Northern and Southern power line route alternatives, short-term impacts to soils would be similar to those identified for the Proposed Action, except that implementation of this alternative would result in approximately 2 fewer acres of disturbance.

Under the Northwest Main Access Route Alternative, Northern and Southern power line routes, short-term disturbances to soils would be similar to those identified for the Proposed Action, except that implementation of this alternative would result in up to approximately 12 greater acres of disturbance.

#### **4.23.6 Air Resources**

Short-term disturbance from construction and operations under all action alternatives would result in emissions of fugitive dust and gases from mine equipment and vehicles. These emissions would not result in any impacts to short-term use and long-term productivity in the project area.

#### **4.23.7 Vegetation Resources Including Noxious and Non-Native, Invasive Weeds and Special Status Plants**

##### **Vegetation**

Disturbance and loss of vegetation until reclaimed would be considered long term for the majority of the activities under all action alternatives. Under all alternatives, the pit represents a permanent loss of 367 acres of vegetation. Under all alternatives except the Western Tailings Storage Facility Alternative, an additional 124 acres of long-term disturbance would not be reclaimed. Although these areas would not be actively reclaimed, natural reclamation of vegetation species likely would occur over time, resulting in establishment of vegetation. Under the Western Tailings Storage Facility Alternative, 38 fewer acres of long-term disturbance would remain unreclaimed.

Impacts to vegetation would initially occur as a result of construction activities; however, the long-term loss of vegetation associated with mining operations and later the non-reclaimed elements of the project would impact the long-term productivity of vegetation and the associated wildlife that would be displaced. Reclamation of disturbed areas would result in the conversion of the pinyon-juniper woodland community to grassland and shrub community types. Productivity could be reduced as a result of noxious weed establishment in previously-disturbed or reclaimed areas.

##### **Noxious and Non-Native, Invasive Weeds**

Short-term disturbance and loss of native vegetation would result from construction and mining activities; concurrent reclamation would be performed, leaving long-term disturbance. Establishment and spread of weeds resulting from the action alternatives may result in a loss of long-term productivity of vegetation.

##### **Special Status Plants**

No special status plants were identified in the analysis areas.

#### **4.23.8 Wildlife Resources, Including Migratory Birds and Special Status Wildlife**

Temporary disturbance and loss of habitat used by numerous species of wildlife could be considered short term if the habitats recover to pre-disturbed condition within 5 years of



reclamation activities. The mine would be reclaimed with seed mixes containing native grass and shrub species wherever feasible to help promote recovery to grassland and shrubland ecotypes. Some habitats would take many years for natural re-growth to occur (e.g., pinyon-juniper woodland and sagebrush may not reach maturity for many years). When reclaiming impacted areas, Midway would include restoration objectives to meet greater sage-grouse habitat needs to help promote long-term recovery of sagebrush habitat. Many impacts to wildlife resources would initially result from construction activities and be temporary in duration, but some would persist through mine operations and closure under all action alternatives.

#### ***4.23.9 Range Resources***

Most impacts to range resources from all action alternatives would result from short-term mining activities, although long-term impacts from the project would persist until successful reclamation was achieved. Under all alternatives, the pit represents a permanent loss of 367 acres of forage resource. Under all alternatives except the Western Tailings Storage Facility Alternative, an additional 124 acres of long-term disturbance would not be reclaimed. Although these areas would not be actively reclaimed, natural reclamation of vegetation species likely would occur over time, resulting in establishment of forage resource. Under the Western Tailings Storage Facility Alternative, 38 fewer acres of long-term disturbance would remain unreclaimed. The impacts from mining disturbance not reclaimed would affect long-term productivity.

#### ***4.23.10 Forest Products and Fuels***

Disturbance and loss of forest product resources until reclaimed would be considered long term impacts (Tables 4.11-1 and 4.11-2). Construction activities and fencing of the active mine area would result in short-term impacts to forest products, including loss of the resource itself and loss of access to the resource. Disturbance associated with mining operations would result in long-term impacts to forest products, including loss of the resource and long-term productivity of forest community and the associated wildlife that would be displaced. Reclamation of disturbed areas would result in the conversion of the pinyon-juniper woodland community to grassland and shrub community types. Forest productivity could be reduced as a result of noxious weed establishment in previously-disturbed or reclaimed areas.

Long-term disturbance and loss of woodlands would result from construction and mining activities. The effects of this disturbance may have an initial beneficial effect on fuels due to the reduction of fuels and fire risk in the short-term.

#### ***4.23.11 Wild Horses***

Most of the impacts to range resources available for wild horses would result from short-term mining and reclamation activities, including loss of access to forage due to mine area fencing. Some long-term impacts from the project would persist until successful reclamation was achieved. In the long term, there would be permanent loss of wild horse habitat in disturbance areas not subject to reclamation. Under all alternatives, the pit represents a permanent loss of 367 acres of forage resource. Under all alternatives except the Western Tailings Storage Facility Alternative, an additional 124 acres of long-term disturbance would not be reclaimed. Although these areas would not be actively reclaimed, natural reclamation of vegetation species likely would occur over time, resulting in establishment of forage resource. Under the Western Tailings Storage Facility Alternative, 38 fewer acres of long-term disturbance would remain unreclaimed. The impacts from mining activities would not affect long-term productivity.



#### **4.23.12 Cultural Resources**

There would be no trade-off between short-term uses and long-term productivity for cultural resources. All direct adverse effects would be permanent.

#### **4.23.13 Native American Religious and Traditional Values**

There would be no trade-off between short-term uses and long-term productivity for Native American religious and traditional values. There is no measure of productivity for religious and traditional values. All direct adverse effects would be permanent.

#### **4.23.14 Land Use Authorization and Access**

Most of the impacts to BLM lands would result from short-term mining and reclamation activities; however, some of long-term impacts from the project would persist until the mine area fence was removed and the disturbed areas were successfully reclaimed. In the long term, there would be permanent loss of public access to the 367-acre pit under all action alternatives.

#### **4.23.15 Visual Resources**

There are no known short-term uses of visual resources that would adversely affect the maintenance and enhancement of long-term productivity.

#### **4.23.16 Recreation**

Most impacts on recreation resources would be for the life of the project, but impacts resulting from the visual disruption would persist beyond the life of the project. Reclamation measures would be applied to areas affected by the proposed project and would reduce the intensity of the impacts related to the visual disruption of the proposed project. The long-term productivity of the area of analysis to provide dispersed recreation opportunities would not be diminished.

#### **4.23.17 Socioeconomic Resources**

Under all action alternatives, short-term uses would involve labor and purchases of construction materials and services from local businesses. The analysis area is and has been an active mining district since the mid- to late-1800s, and the population of the analysis area is accustomed to the cycles of the mining industry. Because these uses would be temporary, they would not interfere with the long-term economic and social stability of the area.

#### **4.23.18 Environmental Justice**

Short-term uses (i.e. construction and operation of action alternatives) would not impact the long-term economic or social stability of minority or low-income populations in the analysis area. The analysis area is and has been an active mining district since the mid- to late-1800s, and the population of the analysis area is accustomed to the cycles of the mining industry. No impacts would occur under the No Action Alternative.

#### **4.23.19 Hazardous Materials and Wastes**

The use of hazardous materials and generation of solid and hazardous wastes in the construction of the action alternatives (short-term) would consume recycle or landfill capacity, but not significantly impact the productivity of off-site waste management facilities in the long-term.



## **CHAPTER 5**

### **CUMULATIVE EFFECTS**

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#### **5.1 INTRODUCTION**

As required under NEPA and the regulations on implementing NEPA, this section analyzes potential cumulative impacts. A cumulative impact is defined as “the impact which results from the incremental impact of the action, decision, or project when added to other past, present, and RFFAs, regardless of what agency (federal or non-federal) or person undertakes such other actions. Cumulative impacts include the impacts from past, present, and reasonably foreseeable future actions (RFFAs) combined with potential impacts from the Proposed Action. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time” (40 Code of Federal Regulations 1508.7). To evaluate cumulative effects in terms of the specific resource, ecosystem, and human community being impacted, a cumulative effects study area (CESA) is defined for each resource for which cumulative impacts may be anticipated.

Nevada BLM Instruction Memo NV-90-435 specifies that impacts must first be identified for the Proposed Action (for example, the Gold Rock Mine Project Proposed Action) before cumulative impacts with other actions can occur (BLM 1990). Environmental consequences of the Proposed Action and alternatives are described in Chapter 4. Because no direct or indirect impacts to paleontological resources, environmental justice or Native American Religious and Traditional Values associated with the Proposed Action were identified in Chapter 4, these resources are not addressed in the cumulative effects analysis. Based upon the analysis conducted for each resource, it was determined necessary to analyze cumulative impacts for the following resources:

- Water Resources
- Geology and Minerals
- Soils and Reclamation
- Prime and Unique Farmland
- Air Resources
- Vegetation and Invasive, Non-native Plant Species, and Special Status Plant Species
- General Wildlife, Special Status Small Mammals and Fish, Big Game, Migratory Birds and Eagles and Greater Sage-grouse
- Range Resources
- Forest Products and Fuels
- Wild Horses
- Cultural Resources
- Land Use Authorization and Access
- Visual Resources
- Recreation



- Socioeconomics
- Hazardous Materials and Waste

For the purposes of this analysis and under federal regulations, “impacts” and “effects” are assumed to have the same meaning and are interchangeable. The cumulative effects analysis was accomplished through the following steps:

- Step 1: Review and assess the BLM's Data Adequacy Standards that determine the level of evaluation necessary to analyze the potential effects of the Proposed Action;
- Step 2: Establish appropriate geographic area CESAs for analysis by resource;
- Step 3: Identify past, present, and RFFAs relevant to the resources in the CESAs.

The cumulative analysis focused on cumulative impacts of the Proposed Action and other actions both within and outside of the Proposed Action analysis areas. Information used in the cumulative impacts analysis was gathered from the following sources: the BLM's LR2000; the BLM's NEPA Registry; the Nevada Atlas and Gazetteer; the BLM website; the USFS website; GIS shape files and information provided by BLM, USFS, and Nevada Bureau of Mines and Geology; aerial photography; topographic maps; Eureka County; White Pine County; and various internet research results.

To determine the size of the CESAs for the Gold Rock Mine Project, each environmental resource was analyzed to determine the extent to which the environmental effect from the Proposed Action could be reasonably detected and then included the geographic areas of resources that could be affected. As a result, the sizes of the CESAs varied by resource. However, for simplicity, ease of cumulative effect analysis, and in an attempt to avoid having only slightly different CESAs for a number of resources, CESA boundaries were left identical for multiple resources where it seemed reasonable and conservative to do so. Table 5.1-1 outlines the CESAs, their size and the figures that describe their boundaries. Some resources are represented by the same CESA boundaries and thus are grouped together in tables and figures throughout Chapter 5. A map of the comprehensive CESA boundary (excluding socioeconomic, and hazardous materials and waste) is shown on Figure 5.1-1.

**Table 5.1-1 Cumulative Effects Study Area by Resource**

Resource	Cumulative Effects Study Area	Size of Area (acres)	Figure
<ul style="list-style-type: none"> <li>• Water Resources</li> <li>• Soils and Reclamation</li> <li>• Prime and Unique Farmland</li> <li>• Vegetation and Invasive, Non-native Plant Species, and</li> <li>• Special Status Plant Species</li> <li>• Special Status Small Mammals and Fish</li> <li>• Forest Products and Fuels</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Groundwater basin 154</b> (Newark Valley) <b>north approximately 15 miles</b> to US 50</li> <li>• <b>Groundwater basin 173B</b> (Railroad Valley/Northern Part) <b>south approximately 15 miles</b> to the Duckwater Shoshone Reservation</li> </ul>	483,967	5.1-2
<ul style="list-style-type: none"> <li>• Geology and Minerals</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Hydrographic sub-basin 154</b> (Newark Valley) <b>north approximately 15 miles</b> to US 50</li> <li>• <b>Hydrographic sub-basin 173B</b> (Railroad Valley, Northern Part) <b>south</b></li> </ul>	499,708	5.1-3



**Table 5.1-1 Cumulative Effects Study Area by Resource**

<b>Resource</b>	<b>Cumulative Effects Study Area</b>	<b>Size of Area (acres)</b>	<b>Figure</b>
	<b>approximately 15 miles</b> to the Duckwater Shoshone Reservation <ul style="list-style-type: none"> <li>• Ruby Hill mine</li> <li>• Pan mine</li> <li>• Mount Hamilton mine</li> <li>• Proposed Gibellini mine</li> </ul>		
• Air Resources	• 50 km grid centered on the Plan area	617,760	5.1-2
• Recreation, • General Wildlife Other Than Special Status Small Mammals and Fish, Big Game, Migratory Birds	• Hunt Unit 131	998,955	5.1-4
• Bighorn Sheep	• Hunt Units 131, 164	1,744,450	5.1-4
• Mule Deer	<ul style="list-style-type: none"> <li>• Hunt Units 131, 132, 133, 134 (these 3 units make up Area 13),</li> <li>• Hunt Unit 108 in Area 10, north of US 50</li> </ul>	4,262,792	5.1-4
• Elk	<ul style="list-style-type: none"> <li>• Hunt Units 131, 132</li> <li>• A portion of Hunt Unit 108 south of the Falcon to Gondor power line</li> </ul>	2,205,883	5.1-4
• Pronghorn Antelope	• Hunts Units 131, 145, 163, and 164	2,816,033	5.1-4
• Migratory Birds and Eagles	The Plan area plus: <ul style="list-style-type: none"> <li>• the area within a 10-mile radius of the Plan area boundary</li> <li>• power line routes for the Proposed Action and alternatives</li> </ul>	484,411	5.1-4
• Greater Sage-Grouse	Four NDOW greater sage-grouse population management units: <ul style="list-style-type: none"> <li>• Butte/Buck/White Pine</li> <li>• Diamond</li> <li>• Monitor</li> <li>• Quinn</li> </ul>	1,727,788	5.1-4
• Range Resources	<ul style="list-style-type: none"> <li>• Duckwater Allotment,</li> <li>• Monte Cristo Allotment,</li> <li>• South Pancake Allotment,</li> <li>• 18 Mile House grazing use area and South Newark pasture area in the Newark allotment</li> <li>• Six-Mile Allotment</li> </ul>	969,208	5.1-5
• Cultural Resources	<ul style="list-style-type: none"> <li>• The western edge of White Pine County from just south of the Elko County line</li> <li>• A small part of Eureka County in the Diamond Range</li> <li>• A small part of Nye County to the south consisting of the Duckwater Valley and adjacent portions of the Pancake Range and Railroad Valley</li> </ul>	1,569,318	5.1-2
• Land Use Authorization and Access	• Hunt Unit 131 west of the Humboldt-Toiyabe National Forest Ely District	391,132	5.1-3



**Table 5.1-1 Cumulative Effects Study Area by Resource**

<b>Resource</b>	<b>Cumulative Effects Study Area</b>	<b>Size of Area (acres)</b>	<b>Figure</b>
	<ul style="list-style-type: none"> <li>The Duckwater Shoshone Reservation</li> </ul>		
<ul style="list-style-type: none"> <li>Wild Horses</li> </ul>	<ul style="list-style-type: none"> <li>Pancake HMA</li> <li>Sand Springs West HMA</li> <li>Monte Cristo Wild Horse Territory</li> </ul>	1,097,208	5.1-2
<ul style="list-style-type: none"> <li>Visual Resources</li> </ul>	<ul style="list-style-type: none"> <li>The viewshed from which a casual observer may distinguish elements of the Proposed Action and action alternatives from the background.</li> <li>This CESA is the area where the proposed facilities may be viewed within a distance of approximately 15 miles as dictated by surface topography.</li> </ul>	562,658	5.1-3
<ul style="list-style-type: none"> <li>Socioeconomics</li> </ul>	<ul style="list-style-type: none"> <li>White Pine County</li> <li>Eureka County</li> <li>Duckwater Shoshone Reservation</li> <li>Special emphasis on communities of Ely, Eureka, and Duckwater</li> </ul>	8,371,898	5.1-3
<ul style="list-style-type: none"> <li>Hazardous Materials and Waste</li> </ul>	<ul style="list-style-type: none"> <li>The Plan area and second water supply well and infrastructure</li> <li>Corridors for the Proposed Action power line route and Northern and Southern power line route alternatives</li> <li>The main access route</li> <li>The northwestern main access route alternative</li> <li>The Pan and Mount Hamilton mines</li> <li>Potential transportation routes to the Plan area from the following major hubs from which materials would be transported: <ul style="list-style-type: none"> <li>From Eureka via US 50 (Lincoln Highway) east;</li> <li>From Ely via US 50 west; or</li> <li>From Elko via I-80 east or from Utah via I-80 west to US 93 and south on US 93 or US 93A to US 93, respectively, to Ely, west on US 50.</li> </ul> </li> </ul>	41,547	5.1-6

### **5.1.1 Time Frame for Analysis**

The estimated conceptual timeline for the Gold Rock Mine Project is presented in Table 2.3-2 and includes 10 years of mining and concurrent reclamation, plus an additional three years of reclamation following the end of mining, for a total of 13 years. An average of 13 years was included in the estimated time frame for this cumulative impact analysis.



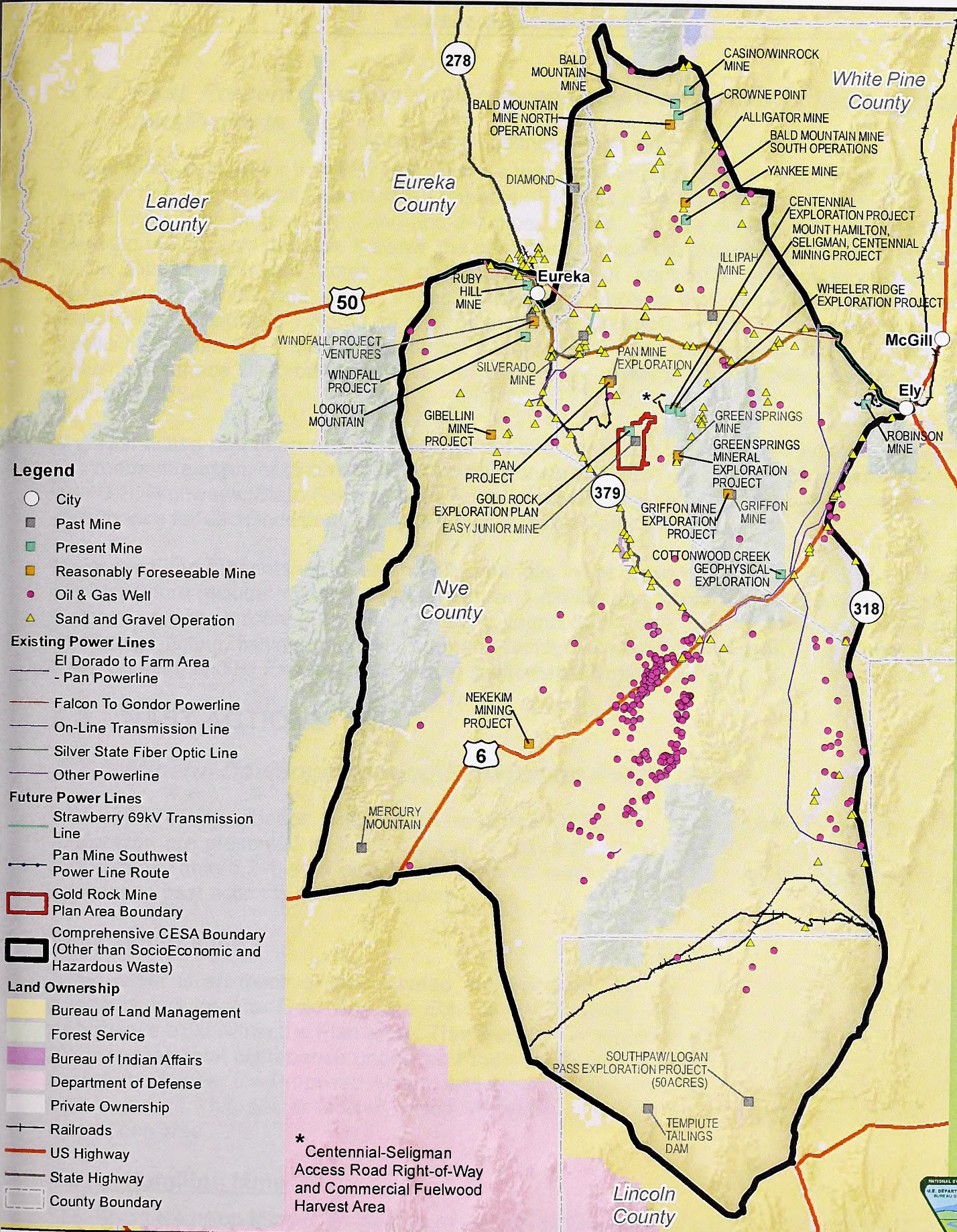


FIGURE 5.1-1  
COMPREHENSIVE CESA BOUNDARY  
AND DISTURBANCE MAP

MIDWAY GOLD US INC.  
GOLD ROCK MINE PROJECT

MAPPED DATE: 10/23/2014

0 23 46  
Miles



U.S. BUREAU OF LAND MANAGEMENT  
ELY DISTRICT  
EGAN FIELD OFFICE

NO WARRANTY IS MADE BY THE BUREAU OF  
LAND MANAGEMENT AS TO THE ACCURACY,  
RELIABILITY, OR COMPLETENESS OF THESE  
DATA FOR INDIVIDUAL USE OR AGGREGATE  
USE WITH OTHER DATA.

Basemap Source: ESRI World Shade Relief Map Service



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### ***5.1.2 Past, Present, Reasonably Foreseeable Future Actions, Disturbances and Projects***

Projects are defined for this DEIS as activities that could interact with the Proposed Action in a manner that would result in cumulative impacts. Projects have been grouped as past, present, and RFFAs. The projects are listed and described below. Surface disturbance was selected to describe the projects because it allows the combined surface disturbance impacts of all projects to be totaled. However, acres of disturbance are not applicable to socioeconomics and hazardous materials and waste impacts; therefore, impacts for those resources are only described qualitatively. Some of the projects are depicted in the Chapter 5 figures, as applicable. Table 5.2-1 identifies potential interactions among the projects and resources and quantifies surface disturbance in acres of each past, present, and RFFAs relevant to each resource CESA.

If a past action has been reclaimed, it has not been included in Table 5.2-1 as a disturbance. For roads, the acres of disturbance within each resource CESA is combined for each road type (i.e. U.S. Highways, State Routes, etc.). For mineral development and exploration, the acres of disturbance for each individual action are displayed on Table 5.2-1.

Major past and present land uses and disturbances in the region that are projected to continue into the future include: mineral development and exploration, utilities, infrastructure and public purpose, roads, wildfires, livestock grazing, agriculture, and mining. Dispersed recreation (including hunting, fishing, and OHV use) and residential development also occur in the region. Past, present, and RFFAs are described in sections 5.2 through 5.20.

## **5.2 PAST ACTIONS**

### ***5.2.1 Mineral Development and Exploration Past Actions***

The acres of disturbance within each resource CESA for past mineral development and exploration are presented in Table 5.2-1. If a past action has been reclaimed, it has not been included in Table 5.2-1 as a disturbance. A brief summary of each mineral development and exploration past action is presented below.

#### **Easy Junior Mine**

Easy Junior is an inactive mine located approximately 65 miles west of Ely, Nevada. Past operators include Alta Gold Co. and Echo Bay Exploration Inc. Approximately 395 acres of disturbance exist within the Plan area. This disturbance represents approximately 10 percent of the proposed total disturbance under the Proposed Action. Most of this disturbance would be re-disturbed under the Proposed Action, and would be reclaimed in accordance with the facility that covers it. This site is located within Midway's approved Gold Rock Exploration Plan of Operations area.

#### **Mount Hamilton Mine**

The Mount Hamilton Mine is an inactive mine located approximately eight miles northeast of the Easy Junior Mine and operated by REA Gold Corp. There are approximately 365 acres of disturbance associated with this mine in the form of an open pit, haul and access roads, waste rock dumps, and areas with removed vegetation and disturbed soils and outcrop (USFS 2014a).



**Green Springs Mine**

Green Springs Mine is an inactive, reclaimed mine located approximately 16 miles northeast of Duckwater, Nevada. U.S. Minerals Exploration Company conducted mining operations, which included excavating ore from three open pits. Approximately 115 acres of disturbance were permitted for mining operations (BLM 2013c). The three open pits remain, representing approximately 23 acres of existing disturbance (BLM 2013c; USFS 2014b). See Section 5.4.1 regarding planned exploration activities associated with the Green Springs Minerals Exploration Project.

**Griffon Mine**

The Griffon Mine property lies approximately 35 miles southwest of Ely, Nevada. The mining area contains disturbance from exploration and mining activities that began in the mid 1980s. The most significant development in the area occurred in the late 1990s when Griffon Mine operated for several years. The Forest Service reclaimed the heap leach pad, mill site, waste rock dumps and roads associated with the mine site (USFS 2012). Acreage of remaining disturbance from the Griffon Mine is approximated as 332 acres based upon GIS data provided by USFS (USFS 2013). Present exploration activities associated with Griffon Mine are described in this chapter under RFFA.

**Illipah Mine**

The Illipah Mine is inactive and is located approximately four miles north of Antelope Summit on US 50. Several companies have conducted exploration in the area of the mine over the last 10 years. Based on a review of aerial photography approximately 327 acres of unreclaimed disturbance are associated with the mine.

**Mercury Mountain Mine**

Mercury Mountain Mine is located in Nye County, Nevada. Fifty-nine acres of surface disturbance associated with this mine are within the pronghorn antelope CESA.

**Pan Project Exploration**

The Pan Project Exploration was a mineral exploration project located approximately 30 miles southeast of Eureka, Nevada. The exploration activities occurred on portions of the area now being developed as the Pan Mine throughout 1990, and were conducted by Alta Gold Co. Approximately 13 acres of disturbance is associated with the project (BLM 2013c). The permits for this project have now been closed and included in the Pan Mine Project.

**Silverado Mill**

The Silverado Mill is an inactive, unreclaimed mill site located approximately three miles north of US 50. Past operators include Einar C. Erickson and G and S Construction Inc. Based on a review of aerial photography, there are approximately 20 acres of unreclaimed disturbance associated with the site.

**Tempiute Tailings Dam**

Tempiute Tailings Dam is a water storage facility in Lincoln County, Nevada. There are approximately 38 acres of disturbance associated with the dam in the mule deer CESA.



Table 5.2-1 Surface Disturbance in Acres of Past, Present, and Reasonably Foreseeable Future Actions for the Gold Rock Mine Project Cumulative Effects Study Area

	Water Resources, Soils and Reclamation, Prime and Unique Farmland, Vegetation and Invasive, Non-Native Plant Species, Special Status Plants, Special Status Small Mammals and Fish, and Forest Products and Fuels	Geology and Minerals	Air Resources	Recreation, General Wildlife Other Than Special Status Small Mammals and Fish, Big Game, Migratory Birds, Eagles and Sage-grouse	Migratory Birds and Eagles	Bighorn Sheep	Elk	Greater Sage Grouse	Mule Deer	Pronghorn Antelope	Range Resources	Wild Horses	Cultural Resources	Land Use Authorization and Access	Visual Resources
<b>Surface Disturbance Acres</b>															
<b>Past Actions</b>															
<b>Mineral Development and Exploration Past Actions</b>															
Easy Junior Mine	395	395	395	395	395	395	395	395	395	395	395	395	395	395	395
Mount Hamilton Mine	395	395	395	395	395	395	395	395	395	395	395	395	395	395	395
Green Springs Mine	23	23	23	23	23	23	23	23	23	23	-	23	23	1	23
Griffon Mine	**	**	170	332	**	332	332	332	332	332	**	**	332	**	**
Illipah Mine	**	**	**	**	**	**	327	327	327	**	**	**	327	**	**
Mercury Mountain	**	**	**	13	**	**	**	**	**	59	**	**	**	**	**
Pan Mine Exploration	13	13	13	13	13	13	13	13	13	13	**	13	13	**	**
Silverado Mill	**	**	20	**	20	**	**	20	**	**	**	**	20	**	**
Tempiute Tailings Dam	13	**	**	13	**	**	**	**	38	**	**	**	**	**	**
Windfall Project Ventures	**	**	**	**	**	**	**	11	**	11	**	**	**	**	**
Sand and Gravel Operations (Past and Present Combined)	139	160	205	193	216	260	235	437	292	380	94	84	304	89	118
<b>Oil, Gas, and Geothermal Development Past Actions</b>															
Oil & Gas (1975 to 2000)	3	3	33	57	13	328	116	108	639	343	87	52	93	30	12
<b>Utilities, Infrastructure and Public Purpose Past Actions</b>															
Falcon To Gondor Powerline	**	36	**	50	**	50	87	314	173	112	-	**	210	**	**
ON- Line Transmission Line	**	**	**	589	**	589	1,088	633	1,350	589	-	**	104	**	**
El Dorado to Farm Area Powerline	53	42	164	112	135	112	112	177	112	177	15	177	177	112	**
Other Transmission Lines (USFS Land)	**	**	**	201	**	201	290	155	325	201	64	**	48	**	**
Railroads	**	243	**	502	**	502	1,205	91	3,645	596	**	**	**	**	**
Silver State Fiber Optic Line	18	58	88	213	94	213	211	265	244	265	94	148	179	92	**
City of Ely	**	**	**	315	**	315	315	**	315	315	**	**	**	**	**
Town of Eureka	**	192	**	**	**	**	**	**	**	279	**	**	**	**	**
Civa Airport	**	**	**	**	**	**	**	**	135	**	**	**	**	**	**
Moorman Ranch Airport	**	**	**	**	**	**	4	4	4	**	**	**	**	**	**
Placer Annex Landing Strip	**	**	**	**	**	**	**	**	16	**	**	**	16	**	**
Currant Ranch Airport	**	**	**	**	**	21	**	**	**	**	21	**	**	**	**
Duckwater Airport	**	**	**	**	**	7	**	**	**	7	-	7	7	**	**
Eureka County Landfill	**	11	**	**	**	**	**	**	**	**	**	**	**	**	**
Mount Wheeler Machacek Substation	**	6	**	**	**	**	**	**	**	**	**	**	**	**	**
<b>Roads Past Actions<sup>2</sup></b>															
U.S. Highways	55	85	244	733	260	985	981	903	1,435	1,408	316	208	514	237	357
State Routes	183	186	315	313	328	512	839	624	1,681	548	347	295	722	246	219







Table 5.2-1 Surface Disturbance in Acres of Past, Present, and Reasonably Foreseeable Future Actions for the Gold Rock Mine Project Cumulative Effects Study Area

	Water Resources, Soils and Reclamation, Prime and Unique Farmland, Vegetation and Invasive, Non-Native Plant Species, Special Status Plants, Special Status Small Mammals and Fish, and Forest Products and Fuels	Geology and Minerals	Air Resources	Recreation, General Wildlife Other Than Special Status Small Mammals and Fish, Big Game, Migratory Birds, Eagles and Sage-grouse	Migratory Birds and Eagles	Bighorn Sheep	Elk	Greater Sage Grouse	Mule Deer	Pronghorn Antelope	Range Resources	Wild Horses	Cultural Resources	Land Use Authorization and Access	Visual Resources
Local/County Roads	565	385	627	1,580	487	1,822	2,513	1,660	3,538	2,293	514	395	1,780	473	514
BLM Roads	3,531	3,811	4,175	8,151	3,907	14,167	16,212	13,594	31,384	20,342	8,288	8,336	11,794	4,107	3,166
USFS Roads	443	448	513	994	331	994	1,527	950	1,539	1,282	13	300	949	34	453
Other Roads	37	37	20	2	**	39	2	38	-	79	<1	**	38	32	12
<b>Recreation Past Actions</b>															
Fairgrounds	37	**	**	**	**	**	**	**	**	**	**	**	**	**	**
Eureka County Fairgrounds	37	122	**	**	**	**	**	**	**	**	**	**	**	**	**
<b>Wild land Fires Past Actions</b>															
Wild land Fire (1983)	**	**	**	**	**	**	10	317	421	**	**	**	858	**	**
Wild land Fire (1984)	**	**	**	**	**	**	1,029	**	32,356	**	**	**	**	**	**
Wild land Fire (1985)	**	**	**	**	**	**	111	**	1,648	**	**	**	1,315	**	**
Wild land Fire (1986)	**	**	**	**	**	**	2,399	4,875	2,399	**	**	**	4,875	**	**
Wild land Fire (1987)	**	**	**	**	**	**	**	9,231	**	**	**	**	**	**	**
Wild land Fire (1988)	**	**	**	**	**	**	**	**	99	**	**	**	**	**	**
Wild land Fire (1989)	**	**	**	**	**	**	**	**	-	**	**	**	185	**	**
Wild land Fire (1991)	**	**	**	**	**	**	**	**	1	**	**	**	**	**	**
Wild land Fire (1992)	**	**	**	**	**	**	**	202	**	**	**	**	202	**	**
Wild land Fire (1995)	**	**	**	**	**	**	**	**	-	**	**	**	1,663	**	**
Wild land Fire (1996)	**	**	**	**	**	**	2	**	-	**	**	**	**	**	**
Wild land Fire (1997)	**	**	**	**	**	**	**	**	-	**	**	**	**	**	**
Wild land Fire (1998)	**	**	**	**	**	**	11	**	11	**	**	**	**	**	**
Wild land Fire (1999)	**	**	**	**	**	**	**	-	-	**	**	**	**	**	**
Wild land Fire (2000)	**	**	**	1,601	**	1,601	428	1,606	1,876	1,601	**	**	1,831	**	**
Wild land Fire (2001)	**	**	**	1,672	**	1,672	1,778	1,778	4,693	1,672	**	**	4,815	**	**
Wild land Fire (2002)	**	**	**	**	**	**	**	**	1,013	**	**	**	59	**	**
Wild land Fire (2004)	**	**	**	**	**	**	**	**	5,830	95	**	**	1,551	**	**
Wild land Fire (2005)	**	**	**	**	**	**	631	**	952	**	**	**	**	**	**
Wild land Fire (2006)	**	**	**	193	**	193	10,018	193	23,513	193	**	**	**	**	**
Wild land Fire (2007)	577	577	577	577	368	577	577	577	853	577	**	2	577	**	577
Wild land Fire (2008)	**	**	**	**	**	**	**	**	1,116	**	**	**	**	**	**
Wild land Fire (2010)	**	**	**	**	**	**	**	**	54	17	**	**	**	**	**
Wild land Fire (2011)	**	**	**	**	**	**	**	**	79	**	**	**	**	**	**
Wild land Fire (2012)	**	**	**	**	**	**	**	2,919	**	**	**	**	2,919	**	**
Wild land Fire (2013)	**	**	**	1,292	**	1,292	1,292	1,428	1,292	5,320	**	**	1,816	**	**
<b>Past Actions Total Disturbance Acres</b>	<b>6,400</b>	<b>7,198</b>	<b>7,947</b>	<b>20,468</b>	<b>7,031</b>	<b>27,580</b>	<b>45,478</b>	<b>44,565</b>	<b>126,531</b>	<b>39,910</b>	<b>10,259</b>	<b>10,800</b>	<b>41,107</b>	<b>5,861</b>	<b>6,224</b>
<b>Present Actions</b>															
<b>Mineral Development and Exploration Present Actions</b>															
Alligator Mine	**	**	**	**	**	**	**	296	580	**	**	**	580	**	**
Bald Mountain Mine	**	**	**	**	**	**	**	**	9,122	**	**	**	9,124	**	**







Table 5.2-1 Surface Disturbance in Acres of Past, Present, and Reasonably Foreseeable Future Actions for the Gold Rock Mine Project Cumulative Effects Study Area

	Water Resources, Soils and Reclamation, Prime and Unique Farmland, Vegetation and Invasive, Non-Native Plant Species, Special Status Plants, Special Status Small Mammals and Fish, and Forest Products and Fuels	Geology and Minerals	Air Resources	Recreation, General Wildlife Other Than Special Status Small Mammals and Fish, Big Game, Migratory Birds, Eagles and Sage-grouse	Migratory Birds and Eagles	Bighorn Sheep	Elk	Greater Sage Grouse	Mule Deer	Pronghorn Antelope	Range Resources	Wild Horses	Cultural Resources	Land Use Authorization and Access	Visual Resources
Casino/Winrock Mine	**	**	**	**	**	**	**	**	226	**	**	**	215	**	**
Centennial Exploration Project	2	2	2	2	2	2	2	2	2	2	**	2	2	**	2
Cottonwood Creek Geophysical Exploration	**	**	**	2,881	**	2,881	2,881	2,881	2,881	2,881	**	**	2,881	**	**
Crowne Point	**	**	**	**	**	**	**	**	265	**	**	**	265	**	**
Gold Rock Exploration Plan	267	267	267	267	267	267	267	267	267	267	267	267	267	267	267
Lookout Mountain	**	**	**	**	**	**	**	79	**	79	**	**	**	**	**
Robinson Mine	**	**	**	5,000	**	5,000	5,000	**	5,000	5,000	**	**	**	**	**
Ruby Hill Mine	**	1,386	**	**	**	**	**	**	**	1,386	**	**	**	**	**
Wheeler Ridge Exploration Project	75	75	75	75	75	75	75	75	75	75	**	61	75	**	75
Cathedral Canyon Exploration Project	5	**	**	5	5	5	5	5	**	5	5	5	5	5	**
Yankee Mine	**	**	**	**	**	**	**	354	354	**	**	**	354	**	**
<b>Oil and Gas Development Present Actions</b>															
Oil & Gas Wells (2001 to Present)	3	3	3	3	3	38	30	5	57	**	**	3	5	3	**
<b>Urban Development Present Actions</b>															
Eureka Canyon Subdivision	**	**	**	**	**	**	**	**	**	164	**	**	**	**	**
<b>Present Actions Total Disturbance Acres</b>	<b>352</b>	<b>1,733</b>	<b>347</b>	<b>8,233</b>	<b>352</b>	<b>8,268</b>	<b>8,260</b>	<b>3,968</b>	<b>18,829</b>	<b>9,897</b>	<b>304</b>	<b>338</b>	<b>13,778</b>	<b>275</b>	<b>304</b>
<b>Reasonably Foreseeable Actions</b>															
<b>Mineral Development and Exploration Reasonably Foreseeable Actions</b>															
Bald Mountain Mine North Operations	**	**	**	**	**	**	**	**	4,602	**	**	**	4,602	**	**
Bald Mountain Mine South Operations	**	**	**	**	**	**	**	3,645	3,645	**	**	**	3,645	**	**
Gibellini Mine Project	**	650	**	**	**	**	**	**	**	730	**	**	730	**	**
Green Springs Mineral Exploration Project	75	75	75	75	75	75	75	75	75	**	**	75	75	**	75
Griffon Mine Exploration Project	4	4	4	4	**	4	4	4	4	2	**	**	4	**	4
Centennial-Seligman Mining and Exploration Project	195	195	195	195	195	195	195	195	195	195	**	195	195	**	195
Centennial-Seligman Access Road Right-of-Way Grant	15	15	15	15	15	15	**	75	15	15	15	**	15	15	15
Nekekim Mining Project	**	**	**	**	**	50	**	**	**	50	**	50	**	**	**
Pan Project	3,301	3,301	3,301	3,301	3,301	3,301	3,301	3,301	3,301	3,301	3,301	3,301	3,301	3,301	3,301
Southpaw/ Logan Pass Exploration Project	**	**	**	**	**	**	**	**	50	**	**	**	**	**	**







Table 5.2-1 Surface Disturbance in Acres of Past, Present, and Reasonably Foreseeable Future Actions for the Gold Rock Mine Project Cumulative Effects Study Area

	Water Resources, Soils and Reclamation, Prime and Unique Farmland, Vegetation and Invasive, Non-Native Plant Species, Special Status Plants, Special Status Small Mammals and Fish, and Forest Products and Fuels	Geology and Minerals	Air Resources	Recreation, General Wildlife Other Than Special Status Small Mammals and Fish, Big Game, Migratory Birds, Eagles and Sage-grouse	Migratory Birds and Eagles	Bighorn Sheep	Elk	Greater Sage Grouse	Mule Deer	Pronghorn Antelope	Range Resources	Wild Horses	Cultural Resources	Land Use Authorization and Access	Visual Resources
Windfall Project	**	**	**	**	**	**	**	150	**	150	**	**	**	**	**
<b>Utilities, Infrastructure and Public Purpose Reasonably Foreseeable Future Actions</b>															
Strawberry 69kV Transmission Line	1	1	11	1	51	1	1	53	1	1	1	19	53	1	**
Mount Wheeler Power Pan Mine Southwest Power Line <sup>1</sup>	272	113	272	272	250	272	272	272	272	272	152	145	272	272	164
Eureka Landfill Expansion	**	80	**	**	**	**	**	**	**	**	**	**	**	**	**
<b>Reasonably Foreseeable Future Actions Total Disturbance Acres</b>	3,863	4,434	3,873	3,863	3,887	3,913	3,863	7,710	12,160	4,793	3,469	3,913	12,892	3,589	3,469
<b>Past, Present, and Reasonably Foreseeable Future Actions Total</b>	10,615	13,365	12,167	32,564	11,270	39,761	57,601	56,243	157,520	54,600	14,032	14,938	67,777	9,725	10,322

Notes:

1 For the Pan Mine South West Power Line Route, used GIS files for the alignment received from Midway on April 25, 2014. For the cumulative effects analysis, the third-party contractor applied a 60-foot-wide buffer (30 feet on each side of center line) to that alignment, and estimated that the project would involve approximately 272 acres. Using GIS, the third-party contractor identified the amount of the total area that would be within each CESA. Since that time, the route has been modified, and a Right-of-Way Grant has been issued for 252 acres (Trujillo 2014).







### **Windfall Ventures**

Windfall ventures is a mineral exploration project located approximately five miles south of Eureka, Nevada conducted by American Selco, Inc. Approximately 15 acres of disturbance are associated with the exploration. Approximately 4.5 acres have been reclaimed (BLM 2013c).

### **White Pine Mine**

The White Pine Mine is an inactive, reclaimed mine located approximately five miles north of the Barrick Bald Mountain North Operations boundary in portions of Sections 35 and 36, Township 25 North, Range 57 East (BLM 2009c), and five miles south of Ruby Lake National Wildlife Refuge in White Pine County. Approximately 67 acres of disturbance are associated with the mine (BLM 2013c). Approximately 67 acres have been reclaimed (BLM 2013c).

### **Jewell Project**

The Jewell Project is a mineral exploration project located approximately five miles south of Eureka, Nevada and conducted by Barrick Mining Co. Approximately 12 acres of disturbance were associated with exploration activities. Approximately 12 acres have been reclaimed (BLM 2013c).

### **Gator Claims Exploration Drilling**

Gator Claims Exploration Drilling is a mineral exploration project located in the southern portion of Alligator Ridge, approximately 10 miles south of Bald Mountain Mine conducted by Placer Dome US Inc. Approximately 19 acres of disturbance are associated with the exploration. Approximately 19 acres have been reclaimed (BLM 2013c).

### **Monte Exploration Project**

The Monte Exploration Project is a mineral exploration project located approximately 25 miles southeast of Eureka, Nevada conducted by Alta Gold Co. Approximately 6.7 acres of disturbance are associated with the project. Approximately 6.7 acres have been reclaimed (BLM 2013c).

### **Gold Bar Mine and Gold Bar II Mine**

The Gold Bar Mine and Gold Bar II Mine, described below, are within Eureka County, and are within the Socioeconomic CESA. These mines are not shown in Table 5.2-1 because acres of disturbance are not applicable to socioeconomic impacts; therefore, impacts are described qualitatively. These mines are described below in order to describe the mineral development and exploration activities within the socioeconomic CESA. Projects within the socioeconomic CESA are described qualitatively in Section 5.17.

#### **Gold Bar Mine**

The Gold Bar Mine is an inactive mine located approximately 30 miles northwest of Eureka, Nevada and was operated by Atlas Gold Mining, Inc. Approximately, 1,175 acres of disturbance are associated with the mine, and approximately 200 acres have been reclaimed (BLM 2013c).

#### **Gold Bar II Mine**

The Gold Bar II Mine is an inactive mine located approximately 30 miles northwest of Eureka, Nevada. Gold Bar Mine II was operated by Atlas Gold Mining, Inc. Approximately 853 acres of disturbance are associated with the mine, and no reclamation activities have occurred (BLM 2013c).



## **Notices of Intent**

There are many closed and expired NOIs within the CESA boundaries (BLM 2013c). Up to five acres of disturbance may occur under a NOI, though actual disturbance could be less in many cases. The BLM LR2000 record system indicated that NOIs for surface disturbance related to locatable minerals total approximately 2,172 acres Within the Egan Field Office and Mount Lewis Field Office administrative areas (BLM 2014c). NOIs were not included in Table 5.2-1 or on any of the CESA maps presented in this section.

## **Sand and Gravel Operations**

There are numerous past permitted gravel pits within the CESA boundary that are closed and several that are currently active within the CESA boundary. Five acres of disturbance were assumed for each sand and gravel operation location where specific disturbance area data were not available. Past and present sand and gravel operations were totaled under past actions in Table 5.2-1.

### ***5.2.2 Oil and Gas Development Past Actions***

Table 5.2-1 displays the combined total acres for past action disturbance of oil and gas development. Disturbance associated with oil and gas development was calculated from known oil and gas fields within the CESA boundary between 1975 and 2000. Oil and gas fields dated prior to 1975 were considered reclaimed. Disturbance from oil and gas wells assumes 3 acres of disturbance for each well. Well locations are obtainable, however not displayed on the CESA figures presented in the section because disturbance associated with wells is minimal (NBMG 2011).

### ***5.2.3 Utilities, Infrastructure and Public Purpose Past Actions***

The acres of disturbance within each resource CESA for past utilities, infrastructure and public purpose are presented in Table 5.2-1 and larger projects are described below.

#### **Falcon to Gonder Power Line**

The Sierra Pacific Power Company Falcon to Gonder Transmission Project involved the construction of a 345 kV power line, generally located between Ely and Dunphy, Nevada. The power line was constructed in 2003, is approximately 180 miles long, and consists of steel H-frame towers (BLM 2001). The location of the Falcon to Gonder Power Line is shown on Figure 5.1-1, and the acreage of disturbance within each CESA is shown in Table 5.2-1.

#### **Mount Wheeler Power Machacek Substation**

The Mount Wheeler Power Machacek Substation is an existing 6.2-acre substation located approximately 0.5 mile northeast of the Ruby Hill Mine (BLM 2013c).

#### **ON Line (One Nevada Transmission Line) Power Line**

The joint NV Energy/Great Basin Transmission South, LLC ON Line Power Line is a built 500 kV transmission line project within the designated Southwest Intertie Project (SWIP) Utility Corridor approved South segment. The three-year construction project was completed on January 28, 2014 (The Ely Times 2014). Reclamation is in the final phases and development of a restoration monitoring plan is underway. The high-voltage line was formally dedicated in January 2014. The 235-mile transmission line extends between the newly constructed Robinson Summit substation at the northern terminus (approximately 18 miles northwest of Ely, Nevada)



and the existing Harry Allen substation at the southern terminus (just north of Las Vegas). In addition, a loop-in of the existing Falcon to Gonder 345 kV transmission line at Robinson Summit substation was constructed and new equipment installed at the existing Harry Allen substation near Las Vegas. The Robinson Summit substation was reported to require approximately 77 acres (BLM 2013c). Approximately 48 miles (1,164 acres) of the ON- Line Project falls within the special status species greater sage-grouse CESA and approximately 45 miles (1,091 acres) of the ON- Line Project are within the land use and access, recreation and wilderness, and socioeconomic CESAs.

### **Other Utility Lines**

The CESAs include several other utility lines including 230 kV power lines, 69 kV power lines, and fiber optic lines. The most current past actions are presented in Table 5.2-2.

**Table 5.2-2 Other Utility Lines Past Actions (Direct Disturbance)**

<b>Name</b>	<b>CESA(s)</b>	<b>Miles</b>	<b>Acres</b>
El Dorado to Farm Area –Transmission Line (69 kV, 30 ft. Right-of-Way)	Air Quality	12	177
	Bighorn Sheep	8	112
	Cultural Resources	12	177
	Elk	8	112
	Geology and Minerals	4	42
	Greater Sage Grouse	12	177
	Land Use Authorization and Access	8	112
	Migratory Bird	9	135
	Mule Deer	8	112
	Pronghorn Antelope	12	177
	Range Resources	1	15
	Recreation, General Wildlife Other Than Special Status Small Mammals and Fish, Big Game, Migratory Birds, Eagles and Greater sage-grouse	15	224
	Water Resources; Soils and Reclamation; Prime and Unique Farmland; Vegetation and Invasive, Non-Native Plant Species, and Special Status Plant Species; Special Status Small Mammals and Fish; Forest Products and Fuels	22	315
Falcon To Gondor Transmission Line (345 kV, 30 ft. Right-of-Way)	Air Quality	56	410
	Bighorn Sheep	7	50
	Cultural Resources	29	210
	Elk	24	87
	Geology and Minerals	3	36
	Greater Sage Grouse	43	314
	Mule Deer	24	173
	Pronghorn Antelope	15	112
ON- Line Transmission Line (500 kV, 60 ft. Right-of-Way)	Recreation, General Wildlife Other Than Special Status Small Mammals and Fish, Big Game, Migratory Birds, Eagles and Greater sage-grouse	14	100
	Air Quality	47	682
	Bighorn Sheep	40	589
	Cultural Resources	7	104
	Elk	75	1,088
	Greater Sage Grouse	44	633
	Mule Deer	93	1350
	Pronghorn Antelope	40	589
	Recreation, General Wildlife Other Than Special Status	81	1,178



**Table 5.2-2 Other Utility Lines Past Actions (Direct Disturbance)**

Name	CESA(s)	Miles	Acres
	Small Mammals and Fish, Big Game, Migratory Birds, Eagles and Greater sage-grouse		
Other Transmission Lines (on USFS land, 30 ft. Right-of-Way)	Air Quality	44	318
	Bighorn Sheep	28	201
	Cultural Resources	7	48
	Elk	40	290
	Greater Sage Grouse	21	155
	Mule Deer	45	325
	Pronghorn Antelope	28	201
	Range Resources	9	64
	Recreation, General Wildlife Other Than Special Status Small Mammals and Fish, Big Game, Migratory Birds, Eagles and Greater sage-grouse	55	402
Silver State Fiber Optic Line (20 ft. Right-of-Way)	Air Quality	68	329
	Bighorn Sheep	54	213
	Cultural Resources	37	179
	Elk	50	211
	Geology and Minerals	7	58
	Greater Sage Grouse	55	265
	Land Use Authorization and Access	21	92
	Migratory Bird	19	94
	Mule Deer	58	244
	Pronghorn Antelope	64	265
	Range Resources	18	80
	Recreation, General Wildlife Other Than Special Status Small Mammals and Fish, Big Game, Migratory Birds, Eagles and Greater sage-grouse	109	426
	Water Resources; Soils and Reclamation; Prime and Unique Farmland; Vegetation and Invasive, Non-Native Plant Species, and Special Status Plant Species; Special Status Small Mammals and Fish; Forest Products and Fuels	24	121

## **Urban Development**

The City of Ely and the Town of Eureka both fall within the CESA boundaries. The surface disturbance associated with the general development areas of the city and town are displayed in Table 5.2-1.

Table 5.2-1 displays the total acres for past action disturbance of Airports and Railroads. A brief description of airports and railroads follows below.

## **Airports**

There are several small airports within the CESA including the Civa Airport, Currant Ranch Airport, Duckwater Airport, Moorman Ranch Airport, and Placer Amex Landing Strip. The Eureka Municipal Airport is located within the CESA and has a runway length of 7,300 feet (BLM 2013c). Approximately 341 acres of disturbance are within the air resources CESA, and 192 acres of disturbance are within the geology and minerals CESA.



## **Railroads**

Railroad systems are present in the vicinity of Ely and Eureka. Rail also runs east to west through Nye and Lincoln counties. A 200-foot Right-of-Way was applied to each railroad for calculating surface disturbance. Past action disturbance acres for railroads are displayed in Table 5.2-1.

## **Eureka County Landfill**

The Eureka County Landfill is located approximately 1,900 feet east of US 50. There are approximately 11 acres of disturbance associated with the Eureka County landfill within the geology and minerals CESA.

### ***5.2.4 Roads Past Actions***

Table 5.2-1 displays miles and acres of roads within each resource CESA. Acres of roads within each resource CESA are also displayed in Table 5.2-3.

**Table 5.2-3 Roads Past Actions**

<b>Roads</b>	<b>CESAs</b>	<b>Miles</b>	<b>Acres</b>
US 50, Approximate 100-foot Right-of-Way	Air Quality	70	849
	Bighorn Sheep	69	836
	Cultural Resources	39	473
	Elk	61	739
	Geology and Minerals	7	85
	Greater Sage Grouse	57	691
	Land Use Authorization and Access	33	400
	Migratory Birds and Eagles	262	3,176
	Mule Deer	69	836
	Pronghorn Antelope	98	1,188
	Range Resources	18	218
	Recreation, General Wildlife Other Than Special Status Small Mammals and Fish, Big Game, Migratory Birds, Eagles and Greater sage-grouse	138	1,673
	Water Resources; Soils and Reclamation; Prime and Unique Farmland; Vegetation and Invasive, Non-Native Plant Species, and Special Status Plant Species; Special Status Small Mammals and Fish; Forest Products and Fuels	25	303
U.S. Highway 6, Approximate 100-foot Right-of-Way	Air Quality	44	533
	Bighorn Sheep	92	1,115
	Cultural Resources	3	36
	Elk	51	618
	Greater Sage Grouse	18	218
	Land Use Authorization and Access	6	73
	Mule Deer	118	1,430
	Pronghorn Antelope	133	1,612
	Range Resources	12	146
	Recreation, General Wildlife Other Than Special Status Small Mammals and Fish, Big Game, Migratory Birds, Eagles and Greater sage-	101	1,224



**Table 5.2-3 Roads Past Actions**

<b>Roads</b>	<b>CESAs</b>	<b>Miles</b>	<b>Acres</b>
U.S. Highway 93, Approximate 100- foot Right-of-Way	grouse		
	Wild Horse	17	206
	Bighorn Sheep	1	12
	Elk	1	12
	Mule Deer	1	12
	Pronghorn Antelope	1	12
	Recreation, General Wildlife Other Than Special Status Small Mammals and Fish, Big Game, Migratory Birds, Eagles and Greater sage-grouse	2	24
SR 267, Approximate 70- foot Right-of-Way	Bighorn Sheep	4	34
	Elk	4	34
	Mule Deer	4	34
	Pronghorn Antelope	4	34
	Recreation, General Wildlife Other Than Special Status Small Mammals and Fish, Big Game, Migratory Birds, Eagles and Greater sage-grouse	8	68
SR 278, Approximate 70- foot Right-of-Way	Air Quality	3	26
	Geology and Minerals	<1	<9
SR 318, Approximate 70- foot Right-of-Way	Air Quality	3	26
	Bighorn Sheep	<1	<9
	Elk	43	365
	Greater Sage Grouse	1	9
	Mule Deer	110	933
	Pronghorn Antelope	<1	<9
	Recreation, General Wildlife Other Than Special Status Small Mammals and Fish, Big Game, Migratory Birds, Eagles and Greater sage-grouse	<1	<9
SR 375, Approximate 70- foot Right-of-Way	Elk	38	322
	Mule Deer	98	832
SR 379, Approximate 70- foot Right-of-Way	Air Quality	55	467
	Bighorn Sheep	55	467
	Cultural Resources	50	424
	Elk	55	467
	Geology and Minerals	21	178
	Greater Sage Grouse	44	373
	Land Use Authorization and Access	55	467
	Migratory Birds and Eagles	269	2,282
	Mule Deer	55	467
	Pronghorn Antelope	55	467
	Range Resources	41	348
	Recreation, General Wildlife Other Than Special Status Small Mammals and Fish, Big Game, Migratory Birds, Eagles and Greater sage-grouse	111	942
	Visual Resources	26	221



**Table 5.2-3 Roads Past Actions**

<b>Roads</b>	<b>CESAs</b>	<b>Miles</b>	<b>Acres</b>
	Water Resources; Soils and Reclamation; Prime and Unique Farmland; Vegetation and Invasive, Non-Native Plant Species, and Special Status Plant Species; Special Status Small Mammals and Fish; Forest Products and Fuels	129	1,095
	Wild Horse	35	297
SR 38, Approximate 70-foot Right-of-Way	Air Quality	3	26
	Elk	43	365
	Greater Sage Grouse	1	9
	Mule Deer	100	849
SR 44, Approximate 70-foot Right-of-Way	Bighorn Sheep	1	9
	Elk	1	9
	Mule Deer	1	9
	Pronghorn Antelope	1	9
	Recreation, General Wildlife Other Than Special Status Small Mammals and Fish, Big Game, Migratory Birds, Eagles and Greater sage-grouse	3	26
SR 485, Approximate 70-foot Right-of-Way	Bighorn Sheep	4	34
	Elk	4	34
	Mule Deer	4	34
	Pronghorn Antelope	4	34
	Recreation, General Wildlife Other Than Special Status Small Mammals and Fish, Big Game, Migratory Birds, Eagles and Greater sage-grouse	8	68
SR 892 (Strawberry Road) , Approximate 70-foot Right-of-Way	Air Quality	22	187
	Cultural Resources	36	306
	Greater Sage Grouse	29	246
	Migratory Birds and Eagles	59	501
	Range Resources	<1	<9
BLM Roads, Approximate 50-foot Right-of-Way	Air Quality	3,276	19,855
	Bighorn Sheep	2,379	14,418
	Cultural Resources	1,956	11,855
	Elk	2,758	16,715
	Geology and Minerals	628	3,806
	Greater Sage Grouse	2,258	13,685
	Land Use Authorization and Access	682	4,133
	Migratory Birds and Eagles	3,958	23,988
	Mule Deer	5,234	31,721
	Prime and Unique Farmland	55	333
	Pronghorn Antelope	3,414	20,691
	Range Resources	1,374	8,327
	Recreation, General Wildlife Other Than Special Status Small Mammals and Fish, Big Game, Migratory Birds, Eagles and Greater sage-grouse	2,710	16,424
	Visual Resources	525	3,182
	Water Resources; Soils and Reclamation; Prime and Unique Farmland; Vegetation and Invasive,	3,511	21,279



**Table 5.2-3 Roads Past Actions**

<b>Roads</b>	<b>CESAs</b>	<b>Miles</b>	<b>Acres</b>
	Non-Native Plant Species, and Special Status Plant Species; Special Status Small Mammals and Fish; Forest Products and Fuels		
	Wild Horse	1,382	8,376
USFS Roads, Approximate 20- foot Right-of-Way	Air Quality	427	1,035
	Bighorn Sheep	420	1,018
	Cultural Resources	400	970
	Elk	663	1,607
	Geology and Minerals	184	446
	Greater Sage Grouse	402	975
	Land Use Authorization and Access	16	39
	Migratory Birds and Eagles	1,623	3,935
	Mule Deer	671	1,627
	Prime and Unique Farmland	11	27
	Pronghorn Antelope	551	1,336
	Range Resources	7	17
	Recreation, General Wildlife Other Than Special Status Small Mammals and Fish, Big Game, Migratory Birds, Eagles and Greater sage-grouse	840	2,036
	Visual Resources	149	361
	Water Resources; Soils and Reclamation; Prime and Unique Farmland; Vegetation and Invasive, Non-Native Plant Species, and Special Status Plant Species; Special Status Small Mammals and Fish; Forest Products and Fuels	1,107	2,684
	Wild Horse	125	303
Local/County Roads, Approximate 50- foot Right-of-Way	Air Quality	391	2,370
	Bighorn Sheep	310	1,879
	Cultural Resources	295	1,788
	Elk	442	2,679
	Geology and Minerals	64	388
	Greater Sage Grouse	277	1,679
	Land Use Authorization and Access	83	503
	Migratory Birds and Eagles	594	3,600
	Mule Deer	661	4,006
	Prime and Unique Farmland	7	42
	Pronghorn Antelope	390	2,364
	Range Resources	85	515
	Recreation, General Wildlife Other Than Special Status Small Mammals and Fish, Big Game, Migratory Birds, Eagles and Greater sage-grouse	548	3,321
	Visual Resources	85	515
	Water Resources; Soils and Reclamation; Prime and Unique Farmland; Vegetation and Invasive, Non-Native Plant Species, and Special Status Plant Species; Special Status Small Mammals and Fish; Forest Products and Fuels	558	3,382
	Wild Horse	64	388



**Table 5.2-3 Roads Past Actions**

<b>Roads</b>	<b>CESAs</b>	<b>Miles</b>	<b>Acres</b>
Other Roads, Approximate 20-foot Right-of-Way	Air Quality	16	39
	Bighorn Sheep	16	39
	Cultural Resources	16	39
	Elk	1	2
	Geology and Minerals	15	36
	Greater Sage Grouse	16	39
	Land Use Authorization and Access	13	32
	Migratory Birds and Eagles	<1	<2
	Mule Deer	1	2
	Pronghorn Antelope	32	78
	Range Resources	<1	<2
	Recreation, General Wildlife Other Than Special Status Small Mammals and Fish, Big Game, Migratory Birds, Eagles and Greater sage-grouse	1	2
	Visual Resources	5	12
	Water Resources; Soils and Reclamation; Prime and Unique Farmland; Vegetation and Invasive, Non-Native Plant Species, and Special Status Plant Species; Special Status Small Mammals and Fish; Forest Products and Fuels	92	223

### 5.2.5 Recreation Past Actions

#### **Recreation Areas, Wilderness Study Areas, Wilderness and National/State Parks**

In order to assess cumulative impacts of surface disturbance within designated recreation areas, WSAs, wilderness and national or state parks, the acreages of disturbance in these areas were combined by individual resource CESA, excluding the socioeconomic and hazardous waste CESAs, and presented in Table 5.2-1. To assess both direct and indirect cumulative impacts, the acreages of recreation areas, WSAs, wilderness, and national or state parks that are not necessarily considered disturbance areas but are located within the comprehensive CESA were identified and presented in Table 5.2-4. Table 5.2-4 reflects the total acres of each of these areas within the comprehensive CESA (Figure 5.1-1). There are no designated recreation areas or national or state parks within any of the CESAs. Additional information regarding recreation is provided in Section 5.18.

**Table 5.2-4 Recreation, Wilderness Study Areas, and Wilderness and Areas Parks Past Actions**

<b>Designated Area (Managing Agency)</b>	<b>Acres</b>
Antelope Range WSA (BLM)	83,760
Bald Mountain Wilderness (USFS)	22,377
Blue Eagle WSA (BLM)	59,279
Currant Mountain Wilderness (USFS)	47,282
Fandango WSA (BLM)	43,425
Grant Range Wilderness (USFS)	52,481
Humboldt - Toiyabe National Forest	743,627
Illipah Reservoir	62



**Table 5.2-4 Recreation, Wilderness Study Areas, and Wilderness and Areas Parks Past Actions**

<b>Designated Area (Managing Agency)</b>	<b>Acres</b>
Morey Peak WSA (BLM)	19,182
Mount Irish Wilderness (BLM)	28,938
Mountain Meadow WSA (BLM)	16
Palisade Mesa WSA (BLM)	98,774
Park Range WSA (BLM)	48,809
Quinn Canyon Wilderness (USFS)	26,257
Rawhide Mountain WSA (BLM)	63,829
Red Mountain Wilderness (USFS)	20,498
Riordan's Well WSA (BLM)	56,541
Shellback Wilderness (USFS)	36,162
The Wall WSA (BLM)	40,591
Weepah Spring Wilderness (BLM)	51,393
White Pine Range Wilderness (USFS)	40,028
Worthington Mountains Wilderness (BLM)	30,594

### ***5.2.6 Wild land Fires, Restoration, and Seeding Past Actions***

Several wild land fires have occurred within the comprehensive CESA between 1983 and 2013 (Figure 5.1-5). The total acres of past wild land fires for each CESA are presented in Table 5.2-1. In addition to what is presented in Table 5.2-1, the BLM Ely District had its first event of the 2014 fire season on April 12 when lightning ignited a 45-acre wildfire in Pleasant Valley (BLM 2014e).

Revegetation treatments typically consist of seeding native species and treating noxious weeds to minimize infestations. Various revegetation treatments have occurred within the CESA (BLM 2013c). Individual restoration activities within the CESA are located greater than 16 miles from the Proposed Action and have not been included as part of the cumulative impacts analysis.

## **5.3 PRESENT ACTIONS**

### ***5.3.1 Mineral Development and Exploration Present Actions***

This section includes current mining projects and sand and gravel operations. The acres of disturbance within each resource CESA for present mineral development and exploration are presented in Table 5.2-1. The following narrative provides a brief summary of mineral development and exploration present actions within the CESA boundary.

#### **Alligator Mine**

The Alligator Mine/ Alligator Ridge Project is located approximately 11 miles south of Barrick's Mooney Basin and controlled by Barrick Gold U.S. Inc. Past operators include Bald Mountain Mining, Inc. and USMX, Inc. The mine includes open pits, waste rock facilities, and a heap leach facility. Most closure and reclamation activities were completed by 2000. Approximately 938 acres of disturbance was permitted for the mine (BLM 2009c). Approximately 580 acres of disturbance is associated with the mine (BLM 2013c). See descriptions below under the Bald Mountain Mine as to Barrick's proposed changes to the operations of the Alligator Mine property.



### **Casino/Winrock Mine**

The Casino/Winrock Mine is located in south Ruby Valley, White Pine County, and controlled by Barrick Gold, Inc. (BLM 2009c). Approximately 226 acres of disturbance is associated with the mine (BLM 2013c). See descriptions above under the Bald Mountain Mine as to Barrick's proposed changes to the operations of the Casino/Winrock property.

### **Bald Mountain Mine**

The Bald Mountain Mine, North Operations is located north of the Yankee and Alligator Ridge mines, approximately 36 miles north of US 50, and is operated by Barrick Gold U.S. Inc. The mine consists of the Bald Mountain Mine and Mooney Basin Plan of Operations areas. Based on a review of aerial photography, approximately 9,124 acres of currently existing disturbance is associated with the mine (BLM 2014f). Barrick is proposing a Bald Mountain Mine expansion of the existing mine facilities in their North Operations Area Project, expansion of the existing Casino/Winrock Plan of Operations and incorporation of it into the North Operations Area Project, and establishment of a South Operations Area Project that would encompass and expand the existing Yankee and Alligator Ridge mine sites (see descriptions in Section 5.4.1 Bald Mountain Mine North and South operations).

### **The Centennial Exploration Project**

Ely Gold & Minerals Inc. (EGM) proposed the Centennial Exploration project. Approximately two acres of disturbance are associated with the project. The project is located near the Mount Hamilton Mine in White Pine County, Nevada (BLM 2013c).

### **Cottonwood Creek Geophysical Exploration**

Southern Nevada Water Authority is conducting magnetic and temperature borehole geophysical surveys on 4.5 square miles in the Cottonwood Creek area of White Pine County. Approximately 2,880 acres of disturbance have been approved (BLM 2013c).

### **Gold Rock Exploration Project**

The Gold Rock Exploration Project is a mineral exploration project located approximately 17 miles north of Duckwater, Nevada, located within portions of the Plan area. The exploration project is being performed by Midway. The BLM authorized 267 acres of disturbance (BLM 2012i), approximately 5 acres of which has been disturbed.

### **Lookout Mountain Exploration Project**

The Lookout Mountain Exploration Project is located approximately eight miles south of Eureka, Nevada and controlled by BH Minerals USA Inc. Previous operators include Echo Bay. Exploration activities include construction of drill sites, roads, and temporary structures. Approximately 9 acres of previous disturbance was inherited from Echo Bay. Approximately 266 acres of disturbance is permitted for the project (BLM 2010, 2013d). Based on a review of aerial photography, approximately 79 acres are currently disturbed.

### **Robinson Mine**

The Robinson Mine, a copper, molybdenum, and gold mine, is located approximately three miles west of Ely, Nevada and controlled by KGHM North America. Approximately 5,000 acres of disturbance are associated with the mine (Kreidler 2014).



### **Ruby Hill Mine**

The Ruby Hill Mine is a mining operation located approximately 0.7 mile northwest of Eureka, Nevada within the historic Eureka Mining District and controlled by Barrick Gold Corporation (BLM 2005b). The existing project includes an open pit, WRDAs, heap leach pad, and process facilities. Approximately 1,742 acres of disturbance are permitted for the mine (BLM 2012d); however, based on a review of aerial photography, approximately 1,386 acres of current disturbance is associated with the mine. This mine shut down temporarily following a high wall failure in November 2013, and is in re-activation of operations (Spiegel 2014). No federal actions are being analyzed at this time (Sherve 2014).

### **Wheeler Ridge Mineral Exploration Project**

The Wheeler Ridge Mineral Exploration Project is located in the White Pine Range and controlled by Mount Hamilton LLC. There are approximately 75 acres of disturbance associated with the project (NDEP 2013f).

### **Cathedral Canyon Exploration Project**

The Cathedral Canyon Exploration project is located approximately 50 miles west of Ely, Nevada and controlled by Bronco Creek Exploration Inc. Approximately five acres of disturbance are associated with the project (BLM 2013c).

### **Yankee Mine**

The Yankee Mine is located approximately five miles south of Bald Mountain and is operated by Barrick Gold U.S. Inc. Past operators include Amselco Exploration, Inc. and Placer Dome U.S. The mine consists of a heap leach facility, three process ponds, a central processing plant, 17 pits, and several waste rock stockpiles (BLM 2009c). Approximately 354 acres of disturbance are associated with the mine (BLM 2013c). See descriptions above under the Bald Mountain Mine as to Barrick's proposed changes to the operations of the Yankee Mine property.

The following mines are (Goldstrike Mine, Buckhorn Mine, Tonkin Springs Mine, Bootstrap Mine, Newmont North Operations, Carlin Mine, Leeville Underground, Gold Quarry, Chevas Exploration Project, High Desert Exploration Project, Newmont Mike Exploration Project, Mill Canyon and Horse Canyon Exploration Project, and the Mount Hope Mine) are within Eureka County, and are within the socioeconomic CESA only. Socioeconomic cumulative impact analysis does not address surface disturbance; therefore, impacts associated with these mines are described qualitatively, and these areas are not shown in Table 5.2- 1. These mines are described below in order to describe the mineral development and exploration activities within the socioeconomic CESA. Projects within the socioeconomic CESA are also described qualitatively in Section 5.17.

### **Barrick Goldstrike Mine**

Barrick Goldstrike Mine is located within both Eureka and Elko counties and controlled by Barrick Gold of North America. Mine operations include open pit/underground mining, milling with associated tailings disposal facilities and ancillary support facilities (BLM 2013c). Approximately 7,616 acres of surface disturbance are within the socioeconomic CESA (BLM 2013c).



**Buckhorn Mine**

The Buckhorn Mine is located approximately 55 miles south of Carlin, Nevada, and 47 miles north of US 50 and controlled by Buckhorn Mines Co. Approximately 465 acres of disturbance are associated with the mine (BLM 2013c).

**Tonkin Springs Mine**

The Tonkin Spring Mine is located approximately 40 miles northwest of Eureka, Nevada. Approximately 448 acres of disturbance are associated with the mine (BLM 2013c).

**Bootstrap Mine**

The Bootstrap Mine is located on the Eureka County and Elko County border and is controlled by Newmont Mining Corporation. Approximately 1,364 acres of disturbance are permitted for the mine (BLM 2013c). Approximately 1,271 acres of disturbance are associated with the mine (BLM 2013c).

**Newmont North Operations**

Newmont North Operations is located in northern Eureka County and controlled by Newmont Mining Corporation. Newmont North Operations consists of the Bluestar Mine, Genesis Mine, Deep Star Portal, Lantern Mine, North Lantern, Lantern 3, and North Area Leach Pad. Approximately 4,204 acres of disturbance are permitted for the operations area (BLM 2013c). Approximately 3,910 acres of disturbance are associated with the mine (BLM 2013c).

**Carlin Mine**

The Carlin Mine is located south of Newmont's North Operations in northern Eureka County and controlled by Newmont Mining Corporation. The Carlin Mine consists of Carlin Mine, Pete Mine, and Mill 1. Approximately 2,910 acres of disturbance are associated with the mine (BLM 2013c).

**Leeville Underground**

Leeville Underground is an underground mine located in northern Eureka County and controlled by Newmont Mining Corporation. Approximately 566 acres of disturbance are associated with the mine (BLM 2013c).

**Gold Quarry**

The Gold Quarry Mine is located in northern Eureka County and is controlled by Newmont Mining Corporation. Operations include the North/South haul road that connects Gold Quarry to the Newmont North Operations area. Approximately 9,878 acres of disturbance are associated with the mine and haul road (BLM 2013c).

**Chevas Exploration Project**

The Chevas exploration project is located in northern Eureka County and controlled by Newmont Mining Corporation. Approximately 168 acres of disturbance are associated with the project (BLM 2013c).

**High Desert Exploration Project**

The High Desert exploration project is located in northern Eureka County and controlled by Newmont Mining Corporation. Approximately 164 acres of disturbance are associated with the site (BLM 2013c).



### **Newmont Mike Exploration Project**

The Mike Exploration project is located adjacent to Newmont's Gold Quarry mine and controlled by Newmont Mining Corporation. Approximately 48 acres of disturbance are associated with the project (BLM 2013c).

### **Mill Canyon**

Mill Canyon Mine is located approximately 17 miles south of Crescent Valley, Nevada and controlled by Barrick Gold Corporation. Previous operators include Newmont Mining Co. and Victoria Gold Corp. Approximately 220 acres of disturbance are associated with the mine (BLM 2013c).

### **Horse Canyon Exploration Project**

The Horse Canyon Exploration Project is located approximately 20 miles south of Crescent Valley Nevada and controlled by Barrick Cortez Inc. Approximately 688 acres of disturbance are associated with the project (BLM 2013c).

### **Mount Hope Project**

The Mount Hope Project is located approximately 20 miles north/northwest of Eureka. The deposit contains approximately 1.3 billion pounds of proven and probable molybdenum reserves. In 2012, General Moly received its Record of Decision from the BLM and secured the remaining Nevada Division of Environmental Protection permits needed to construct and operate the Mount Hope Project. The surface disturbance associated with the proposed project totals 8,318 acres (BLM 2012f, General Moly 2014).

### **Sand and Gravel Operations**

Approximate disturbance associated with sand and gravel operations were combined for surface disturbance calculation and provided in Table 5.2-1 under past actions as “past and present sand and gravel operations”. Due to the number of sand and gravel operations within the comprehensive CESA boundary, no sand and gravel pits are shown on Chapter 5 figures.

### ***5.3.2 Utilities, Infrastructure and Public Purpose Present Actions***

There are no significant utility, infrastructure and public purpose present actions.

### ***5.3.3 Oil, Gas, and Geothermal Development Present Actions***

One primary producing oil field, the Blackburn Oil Field, is located within the socioeconomic CESA only (NBMG and Hess 2001). This field is located 50 miles north of Eureka Township in Eureka County, Nevada. Approximately 340 acres of disturbance are associated with the project (BLM 2013c).

In 2014, the BLM approved an APD to drill an exploration well called Leoman Springs, located south of the Plan area, approximately 8 miles west of Currant, Nevada in Nye County. Total project disturbance would be approximately 2 acres (BLM 2014a).

Table 5.2-1 displays the total acres of oil and gas development for present action disturbance. Disturbance associated with oil and gas development was calculated using available information for the Blackburn Oil Field between 2001 and 2014 (NBMG 2011 and BLM 2014c). Disturbance from oil and gas wells assumes approximately 3 acres of disturbance for each well. Well



locations are obtainable, however not displayed on the CESA figures presented in the section because disturbance associated with wells is minimal.

Based on NBMG mapping of current geothermal projects and exploration activity, the majority of geothermal projects in Nevada are to the west of the CESA boundary. The only current geothermal exploration within the CESA boundary noted on NBMG mapping is the Alligator Ridge Oski Energy project, which is described below in reasonably foreseeable future actions because no known work has been completed on the project recently (NBMG 2014).

### ***5.3.4 Recreation Present Actions***

#### **Eureka County Fairgrounds**

The Eureka fairgrounds are located approximately one mile north of Eureka, Nevada. Approximately 122 acres of disturbance associated with the construction of the fairgrounds is within the and geology and minerals CESA (BLM 2013c). Construction of the fairgrounds contributes to cumulative impacts within this CESA.

### ***5.3.5 Wild land Fires***

There are presently no known wild land fires active in the CESA area.

### ***5.3.6 Urban Development Present Actions***

#### **Eureka Canyon Subdivision**

The Eureka Canyon subdivision is an approved multifamily and single family subdivision located in Eureka, Nevada. The project includes open space, a greenbelt area, and temporary housing (ECBC 2011). Approximately 164 acres of disturbance are associated with the subdivision (BLM 2013c).

## **5.4 REASONABLY FORESEEABLE FUTURE ACTIONS**

### ***5.4.1 Mineral Development and Exploration***

#### **Bald Mountain Mine North and South Operations**

The BLM is finalizing alternatives in the Draft Environmental Impact Statement (DEIS) for a Barrick Gold US, Inc., proposal to expand the Bald Mountain Mine located in White Pine County, about 70 miles northwest of Ely and 30 miles northeast of Eureka, Nevada. The final EIS was expected to be completed in 2014, but Barrick has reported that the final EIS may not be completed until 2015 (Elko Daily 2014). The main issue in the EIS is how to handle impacts to mule deer and greater sage-grouse. An alternate plan is under development. The proposal calls for the expansion of existing mine facilities in the North Operations Area Project, expansion of the existing Casino/Winrock Plan of Operations and incorporating it into the North Operations Area Project, and establishment of a South Operations Area Project that would encompass and expand the existing Yankee and Alligator Ridge mines (BLM 2014f). Expanding the North Operations Area Project and incorporating the Casino/Winrock Plan of Operations into the North Operations Area Project would increase the total surface disturbance from 9,124 acres to 13,704 acres and add four new heap leach pads. Establishing the South Operations Area Project would increase the total surface disturbance to 3,645 acres. The South Operation Area Project Plan of Operations would include an electrical transmission line and an access road between the North and South operations areas.



### **Gibellini Mine**

American Vanadium proposes to develop the Gibellini Mine, located approximately 20 miles south of Eureka in Eureka and White Pine Counties, Nevada (BLM 2013a). A Plan of Operations was submitted in December 2012 to disturb approximately 730 acres to construct, operate, reclaim, and close an open pit, heap leach vanadium mining operation. The proposed project would also include a water and communications corridor extending 6.5 miles from the Fish Creek Ranch to the proposed project area, and a power corridor generally paralleling the Fish Creek Road to US 50. The project will eventually involve on-site power generation using a photovoltaic array and vanadium battery demonstration as part of the Project.

The proposed 21-mile route for the American Vanadium Gibellini Mine power line would run west from the junction at Strawberry Road and US 50 along US 50 then head south along SR 379, east along Fish Creek Road, and south terminating at the American Vanadium Gibellini Mine site. A portion of the power line will be shared with the Pan Mine and is currently under construction. The American Vanadium Gibellini Mine is located within the Gibellini Mining District.

### **Green Springs Mineral Exploration Project**

The project is located approximately 7 miles southeast of Midway's Gold Rock project on the western flank of the White Pine Range in the southwest corner of the historic White Pine Mining District, approximately 40 miles West of Ely Nevada. An Exploration Plan of Operations was submitted to the U.S. Forest Service in October 2013 (EGM 2014), and a Draft Decision Notice and Finding of No Significant Impact for the Green Springs Exploration Project was issued in September 2014. Exploration activities in the project area would include a total of approximately 75 acres of surface disturbance within an approximate 801-acre project area over a period of approximately five years (USFS 2014b). The property consists of 76 unpatented mineral claims and 2 mining claims covering an area of 1500 acres (EGM 2014). Green Springs is a past producing gold mine which produced 1.1 million metric tons of ore averaging 2.1 g/t gold.

### **Griffon Mine Exploration Project**

The Pilot Gold (USA) Inc. Griffon Mine Exploration Project is located approximately 35 miles southwest of Ely, Nevada within the Humboldt-Toiyabe National Forest in White Pine County. The project consists of drilling 40 exploration holes using existing roads, overland travel and constructed roads. The total disturbance of the exploration is 4.2 acres (USFS 2012).

### **Mount Hamilton LLC Centennial-Seligman Mining and Exploration Project**

The Centennial-Seligman Mining and Exploration Project is located approximately 40 miles west of Ely on the western side of Mount Hamilton at the site of the Rea Gold's previously mined Northeast Seligman deposit. Proposed activities would disturb 476 acres of National Forest Land and 26 acres of private lands for a total of 502 acres. A total of 307 acres of the new mining operation would be within the existing disturbance footprint of the Mount Hamilton mine and 195 acres would be new disturbance (USFS 2014a).

### **Mount Hamilton LLC Right-of-Way Grant**

The BLM authorized a Right-of-Way for improvement or widening and maintenance of existing roads on BLM-administered land with an approved disturbance area totaling approximately 10 acres, and for widening and maintaining an existing road related to mineral exploration activities (BLM 2013d). The BLM issued two commercial fuelwood harvest permits on a total of



approximately 15 acres along these access roads (Coombs 2014a, Coombs 2014b). The larger disturbance area of 15 acres was included in the cumulative effect analysis and is shown in Table 5.2-1.

### **Nekekim Mining Project**

The Nekekim Mining Project is located in Nye County and controlled by Nekekim Mining Corporation. Nekekim currently has a pending Plan of Operations for the project. Approximately 50 acres of disturbance is proposed (BLM 2013c).

### **Pan Mine**

The Pan Mine is Midway gold's sister project to the Gold Rock Mine, which is located only 1.4 miles away. The Pan Mine is located approximately 5 miles north of the proposed Gold Rock Mine project at the northern end of the Pancake mountain range in western White Pine County, Nevada, approximately 22 miles southeast of Eureka, Nevada, and 50 miles west of Ely, Nevada. The project was approved by BLM in December 2013 and the total permitted surface disturbance associated with Pan Mine is approximately 3,301 acres (BLM 2013c).

### **Southpaw/Logan Pass Exploration Project**

A preliminary environmental assessment was issued by the BLM on January 3, 2014 for the proposed Southpaw/Logan Pass Exploration project. The plan proposes a total of 50 acres of surface disturbance to occur in a phased exploration program over 10 years in two areas, the Logan Pass Area and the Southpaw Area in the southern flanks of Mount Irish approximately 50 miles west of Caliente, Nevada. Fifty acres of surface disturbance associated with this proposed project are located within the mule deer CESA.

### **Windfall Project**

The Windfall Project is located approximately four miles south of Eureka, and controlled by BH Minerals who currently has pending a Plan of Operations for the project. Approximately 150 acres of disturbance is proposed (BLM 2013c).

The following mines are within Eureka County, and are within the socioeconomic CESA: Greater Gold Quarry and Green Lantern. Socioeconomic cumulative impact analysis does not address surface disturbance; therefore, impacts are described qualitatively, and these mines are not shown in Table 5.2-1. These mines are described below in order to describe the mineral development and exploration activities within the socioeconomic CESA. Projects within the socioeconomic CESA are described qualitatively in Section 5.17.

### **Gold Bar Project**

The Gold Bar Project is located approximately 28 miles northwest of Eureka, Nevada and controlled by McEwen Mining Inc. who currently has a pending Plan of Operations for the project. There are approximately 835 acres of proposed disturbance associated with the project (BLM 2013c).

### **Greater Gold Quarry**

The Greater Gold Quarry project is located approximately five miles north of Carlin, Nevada and controlled by Newmont Mining Corporation. Approximately 1,468 acres of disturbance is proposed in association with the mine expansion (BLM 2013c).



## **Green Lantern**

The proposed Green Lantern Project is located in northern Eureka County and is controlled by Newmont Mining Corporation. Approximately 244 acres of disturbance are proposed for the project (BLM 2013c).

## **Sand and Gravel Operations**

Reasonably foreseeable sand and gravel operations were not calculated for inclusion in Table 5.2-3 given the limited applications potentially in process for future sand and gravel activity.

### ***5.4.2 Oil, Gas, and Geothermal Development***

The BLM has issued a number of oil and gas leases within the valley floor locations (BLM 2014c and BLM 2014g) of the CESA. Acreage of the planned oil and gas leases is summarized in Table 5.2-1. Planned oil and gas activity within the CESA has declined in recent years (BLM 2014d; Hummer 2014). Based on NBMG mapping of current geothermal projects and exploration activity, the majority of geothermal projects in Nevada are to the west of the CESA. The only current geothermal exploration within the CESA noted on NBMG mapping is the Alligator Ridge Oski Energy project, which is described as a reasonably foreseeable action because no known work has been completed on the project recently (NBMG 2014).

Oski Energy is in the initial stages of geothermal exploration located adjacent to Alligator Ridge gold mine (NBMG 2014). Barrick Gold is considering re-opening this mine, and Oski is in discussions with them. Oski reports an estimated 20 to 40 MW resources. The location of the geothermal exploration is undetermined; therefore, the acres of disturbance are not included in Table 5.2-1 (NBMG 2012a).

### ***5.4.3 Utilities Infrastructure and Public Purpose***

#### **Department of Energy (DOE) Electric Distribution Line**

The DOE has a proposed Electric Distribution Line project pending. Total proposed disturbance associated with the DOE distribution line would be 611 acres (BLM 2013c). No exact location of the distribution line has been proposed; therefore, the acres of disturbance are not included in Table 5.2-1 (BLM 2013c).

#### **Mount Wheeler Power Inc.**

Mount Wheeler Power Inc. proposes to construct a new line from Windfall Canyon near Eureka, Nevada to New York Canyon located south of Carson City. The new line would parallel a portion of their existing power line that follows US 50. The project would also include rebuilding a portion of the existing line to connect to the existing buried power line that provides power to the Communication site on Prospect Peak. Total disturbance within the CESA would be approximately 9 acres (BLM 2013c). No exact location of the transmission line construction and upgrades have been proposed; therefore, the disturbance is not included in Table 5.2-1 (BLM 2013c).

#### **Strawberry 69 kV Transmission Line Right-of-Way Project**

Mount Wheeler Power, Inc. is proposing to construct a project that would consist of approximately 7 miles of a 69 kV overhead transmission line connecting to an existing 69 kV overhead transmission line on Strawberry Road, and would span south along Strawberry Road, and cross US 50 to its terminus adjacent to US 50 (BLM 2013b). The proposed overhead



transmission line would be located adjacent to an existing 25 kV distribution line that runs adjacent to Strawberry Road. The new construction would include the 69 kV overhead transmission line and structures and a 12- to 15-foot-wide two-track maintenance road on the west side of the proposed 60-foot-wide Right-of-Way. The Right-of-Way totals approximately 53 acres. The majority of disturbance would occur from the construction of the maintenance road and to a lesser extent from the disturbance associated with the pole locations; however surface disturbance estimates for the Right-of-Way have been included in Table 5.2-1. The maintenance road would be used for the duration of the Project to inspect and maintain the overhead transmission line, as necessary.

### **Pan Mine Southwest Power Line Right-of Way Project**

Mount Wheeler Power, Inc. is constructing a power line that would consist of approximately 35 miles of a 69 kV overhead transmission line connecting to the Mount Wheeler Power 69 kV overhead transmission line northwest of the Pan Mine and would span west adjacent to US 50, then south and southwest adjacent to SR379, then would run overland to the east then north to the Pan Mine. The new construction would include the 69 kV overhead transmission line and structures and a 12-foot-wide two-track maintenance road within the proposed 60-foot-wide Right-of-Way.

At the time of the cumulative effects analysis, a conceptual Right-of-Way that totaled 272 acres was used and is presented in Table 5.2-1; however, the approved Right-of-Way totals approximately 252 acres (Trujillo 2014). The majority of disturbance would occur from the construction of the maintenance road and to a lesser extent from the disturbance associated with the pole locations; however surface disturbance estimates for the Right-of-Way have been included in Table 5.2-1. The maintenance road would be used for the duration of operation of the Pan Mine to inspect and maintain the overhead transmission line, as necessary.

### **Eureka County Landfill Expansion**

A Plan of Development has been submitted to expand the existing Eureka County Landfill. Approximately 80 acres of disturbance are proposed (BLM 2013c).

## ***5.4.4 Roads***

### **Siegel Creek Road Restoration**

The USFS is proposing to reclaim approximately 11.5 miles of unauthorized roads to reduce soil erosion, reduce sedimentation into stream, and reduce road densities to improve habitats for wildlife. The project is located in the northeast portion of the Schell management unit of the Ely Ranger District, approximately 40 miles northeast of Ely, Nevada. The project is currently under analysis with the USFS and no disturbance has been proposed at this time (BLM 2013c). The project is currently under analysis with no proposed disturbance associated with it; Therefore, no disturbance was included in Table 5.2-1 (BLM 2013c).

## ***5.4.5 Other Reasonably Foreseeable Actions***

### **Newark and Huntington Watersheds Implementation**

The Newark and Huntington Watersheds are located in the corner of White Pine County covering 646,441 acres (BLM 2013e). The purpose of the action is to implement the Plan so that there is a landscape scale improvement to upland vegetation and riparian areas within the watersheds. The need for the action is to manage watersheds so that they display physical and



biological conditions or functions required for necessary ecological components to achieve state water quality criteria, maintain ecological processes and sustain appropriate uses. BLM administers approximately 482,389 acres within the Newark Watershed and approximately 95,139 acres within the Huntington Watershed (BLM 2013e). The acreage of disturbance associated with the watershed implementation projects is unknown and is not included in Table 5.2-1, and the watershed implementation plan is evaluated qualitatively in this cumulative impact analysis.

## **5.5 WATER RESOURCES**

### ***5.5.1 CESA Boundary***

The CESA boundary for water resources is shown on Figure 5.1-2 and includes groundwater basin 154 (Newark Valley) north approximately 15 miles to US 50 and groundwater basin 173B (Railroad Valley/Northern Part) south approximately 15 miles to the Duckwater Shoshone Reservation. The total area of this CESA is 483,967 acres (756 square miles). This CESA was chosen because it encompasses the Proposed Action and action alternative analysis areas, and the areas within which other water uses could cumulatively interact with the water resources associated with the Proposed Action.

No mapped wetlands are present in or near the Proposed Action or Action Alternative analysis areas; therefore, no impact to wetlands are anticipated, and wetlands are not considered further in this section.

### ***5.5.2 Introduction***

The water resources CESA includes high elevation headwater areas, relatively low elevation terminal basins (i.e. playas), and elevations in between. The climate is generally semiarid, and, as is typical for the Great Basin, precipitation varies markedly with elevation. The natural hydrologic characteristics of the CESA are in large part a function of its climate, geology, and vegetation. Thus, these characteristics vary within the 756 square mile that the CESA covers.

Undeveloped wild lands comprise the majority of the water resources CESA. Its highest elevations are primarily lands that are managed by the USFS. The BLM manages the public land encompassing much of the CESA's lower elevations, although there are also sections of privately-owned land. Primary land uses within the CESA that can affect water resources include those which use water (e.g., mining, agriculture) as well as those which have the potential to affect water quality (e.g., transportation, grazing).

### ***5.5.3 Past and Present Disturbances***

Several of the past and present activities listed in Table 5.2-1 occur within the water resources CESA and likely affect the quantity or quality of surface water and/or groundwater. The Easy Junior Mine, Green Springs Mine, Centennial, Gold Rock Exploration Project, Wheeler Ridge Exploration Project, Cathedral Canyon Exploration Project and various sand and gravel pits and oil and gas wells have used or are currently using water (typically groundwater) as part of their operations, either for dust control or processing. Other projects within the CESA included the El Dorado to Farm Area power line, the Silver State Fiber Optic Line, and existing roads. These entities may also affect water quality. General surface disturbance can cause sediment loading; channel rerouting can cause erosion/sedimentation; and inadvertent spills of process water, drilling fluids, or other hazardous substances can contaminate surface water or shallow groundwater.





Lander County

White Pine County

Eureka County

Nye County

**Legend**

- Gold Rock Mine Plan Area Boundary
- Cultural CESA
- Air Resources CESA
- Wild Horses CESA
- Forest Products and Fuels, Water Resources, Soils and Reclamation, Prime and Unique Farmland, Vegetation and invasive, Non-Native Plant Species, and Special Status Plant Species CESA
- Horse Management Area (HMA) or Horse Territory (HT)
- County Boundary
- Land Ownership**
- Bureau of Land Management
- Forest Service
- Bureau of Indian
- Private Ownership
- US Highway
- State Highway
- City

Duckwater Reservation

Pancake Wild Horse HMA

Sand Springs West Wild Horse HMA

Monte Cristo Wild Horse HT

**FIGURE 5.1-2**  
WATER RESOURCES, SOILS AND RECLAMATION, PRIME AND UNIQUE FARMLAND, AIR RESOURCES, VEGETATION AND INVASIVE, NON-NATIVE PLANT SPECIES, FOREST PRODUCTS AND FUELS, WILD HORSES, CULTURAL CESAs

MIDWAY GOLD US INC.  
GOLD ROCK MINE PROJECT

MAPPED DATE: 9/21/2014

0 14 28  
Miles



U.S. BUREAU OF LAND MANAGEMENT  
ELY DISTRICT  
EGAN FIELD OFFICE

NO WARRANTY IS MADE BY THE BUREAU OF LAND MANAGEMENT AS TO THE ACCURACY, RELIABILITY, OR COMPLETENESS OF THESE DATA FOR INDIVIDUAL USE OR AGGREGATE USE WITH OTHER DATA.

Basemap Source: ESRI World Shade Relief Map Service



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Power line projects may have used water during construction; their largest potential post-construction effect is likely related to erosion/sedimentation associated with access roads or un-reclaimed disturbances. Other unpaved roads, such as those crossing public land within the water resources CESA, can also be a source of sedimentation. All roads, including federal, state, local, private, BLM, and USFS roads, can present water quality impacts due to inadvertent spills or releases during vehicular accidents.

Oil and gas development has occurred within the water resources CESA. This activity typically uses water, and also has the potential to degrade both surface water and groundwater if drilling fluids are not properly managed, or if wells are not properly developed. New roads are often built in association with oil and gas development, with the same potential consequences as mentioned above. Other activities, such as grazing, that are not described in Table 5.2-1 also have the same potential consequences because they use water and involve land disturbance.

The largest water use in the water resources CESA is irrigation, with permits totaling over 27,000 afy, which is 150 percent of perennial yield for the Newark Valley. However, the actual amount of water used for irrigation is less than the permitted amount, being approximately 9,300 afy in 2011 and 2012. Using 9,300 afy for irrigation, total water use for the basin would be approximately 10,736 afy, which is well below the perennial yield for the basin (18,000 afy). In addition to its significance relative to water use, irrigation can affect water quality through return flows that have had contact with agricultural chemicals or that mobilize sediment from cultivated fields. Agricultural chemicals can affect both surface water and groundwater quality.

Regarding water in Railroad Valley/Northern part of the water resources CESA, the current perennial yield of the aquifer system in this basin (i.e., 173B) is estimated by NDWR at 75,000 afy (NDWR 2014c). The NDWR has appropriated 26,402 afy of water rights in the Railroad Valley/Northern Part (NDWR 2014c). Midway estimates that it would use water at an average rate of approximately 1,200 gpm (Midway 2013a), which equates to approximately 2,000 afy. Midway's proposed water use would represent approximately 7.6 percent of current groundwater use in the Railroad Valley/Northern Part and 2.7 percent of perennial yield. Therefore, it appears that there is a sufficient amount of unappropriated water available in the Railroad Valley/Northern Part that the Proposed Action would not impact other water users in the area.

Finally, several previous wild land fires, a prescribed burn, and a pinyon-juniper removal project may have resulted in channel incision and potentially continue to provide elevated sediment loads to water resources CESA stream channels. In sum, all of these activities have the potential to affect water resources.

#### ***5.5.4 Reasonably Foreseeable Future Disturbances***

RFFAs are summarized at the end of Table 5.2-1. They include many of the same types of activities (with the same potential effects) as described in Section 5.4. Green Springs Mineral Exploration Project, Griffon Mine Exploration Project, Mount Hamilton Seligman, Centennial Mining Project and related access road right-of way, the Pan Project, and the Strawberry Transmission Line Project are the primary proposed projects listed in Table 5.2-1 that may occur within the water resources CESA. All of them would require surface disturbance. Often, the greatest risk to surface water with these types of projects is during and immediately after construction. Generally, the potential impacts to water resources from these RFFAs are the same as described above for the past and present activities.



### **5.5.5 Cumulative Disturbances**

Of the total 483,967 acres covered by the water resources CESA, 10,615 acres of disturbance are associated with past, present, and RFFAs, which is a disturbance of approximately 2 percent of the CESA. Recognizing that 267 acres of exploration disturbance at Gold Rock are already included as a present action (Table 5.2-1), the Proposed Action would increase the disturbance within the CESA by 3,679 acres to approximately 14,294 acres, or approximately 3 percent of the CESA. This additional disturbance does not include other acreage associated with agriculture or other activities that also have the potential to affect water resources. The amount of acreage disturbed by any one activity or type of activity may not be directly proportional to water impacts because of the different types of links between surface disturbances (e.g. type of activity, soil type, and slope) and the potential for elevated erosion rates. However, with 395 acres of existing disturbance within the Plan area and approximately 3,456 acres to be reclaimed, the net long-term disturbance within the CESA due to the Proposed Action would be approximately 96 acres.

### **5.5.6 Cumulative Effects**

#### **Surface Water**

The Proposed Action and action alternatives, in combination with noted past, present, and RFFAs could impact surface water resources within the water resources CESA. Impacts could include erosion, sedimentation through ground disturbances and/or channel rerouting, vegetation clearing, stockpiling of topsoil, contact with waste rock, and general soil disturbance. These impacts can affect water quality and channel stability even in ephemeral or intermittent channels such as those found in the CESA.

Under the Proposed Action or action alternatives, implementation of the Applicant-Committed EPMs as described in Table 2.3-8 and Section 2.3.17 would minimize short-term and long-term effects to water resources. For present actions and RFFAs, these impacts would be reduced through storm-water management and other BMPs. Most of these impacts are temporary and subject to reclamation activities, which reduce the impact of an individual activity over time and reduce the potential for cumulative impact because the activities occur at various times. Further, these activities are spatially dispersed and the effects are generally localized when they occur within the type of environment found in the water resources CESA.

#### **Groundwater**

The Proposed Action includes one existing water supply and possibly one or more additional water supply wells to be developed in the basin fill aquifer. Together these wells would be capable of providing approximately 1,200 gpm (i.e., approximately 2,000 afy) of groundwater, which would be a small percentage (approximately 2.7 percent) of the aquifer's perennial yield. If Midway's applications to appropriate groundwater are approved, Midway would receive rights that the NDWR has already appropriated for the Railroad Valley/Northern Part basin, and Midway would not add cumulatively to the quantity of water appropriated from the aquifer by the other activities described above in Sections 5.5.3 and 5.5.4, and would not cause use to exceed perennial yield (use would still only be slightly more than two-thirds of perennial yield).

Potential cumulative impacts to groundwater quality may occur due to inadvertent releases of hazardous substances, as a result of leakage or releases from mining or processing facilities, or due to inadvertent accidents or spills. These potential impacts include waste rock leachate, hydrocarbon spills, process water leaks or spills, septic system/leach field releases, and drilling fluid escape. Present actions and RFFAs could include no-discharge designs for all process



facilities, BMPs such as spill control plans, leak detection systems, and other environmental protection measures directed at protecting water quality. These measures would prevent these types of impacts from occurring or control them if they do occur. Further, any contaminant releases would be mitigated before reaching surface waters or groundwater, and would therefore be short-term. There is no currently available information suggesting there may be widespread impacts to groundwater quality in the water resources CESA from past or present actions. The distances between these widely separated actions would also mitigate the impacts that water quality impacts from any of these actions may have on any of the other actions.

## **5.6 GEOLOGY AND MINERALS**

### ***5.6.1 CESA Boundary***

The CESA for geology and minerals is illustrated on Figure 5.1-3. The CESA encompasses the Newark Valley groundwater basin north of the Plan area to US 50 and the Railroad Valley/Northern Part groundwater basin south of the Plan area approximately 15 miles to the Duckwater Shoshone Reservation. In addition, the CESA encompasses 2-mile buffers around the Ruby Hill mine, Mount Hamilton mine, and the proposed Gibellini mine. The total area of this CESA is 499,708 acres. This CESA boundary was chosen because it encompasses areas of each groundwater basin where geology and mineral resources would be affected.

### ***5.6.2 Introduction***

Mining and mining exploration activities typically have the largest impacts on geology and minerals because they can contribute to mineral resource depletion, remove mineral resources from availability for future development, change topography, and affect geotechnical stability. Excavation of mine pits can produce unstable pit walls and overburden stockpiles can also be unstable if improperly designed or managed.

The best indicator for cumulative effects on geology and minerals is the quantity of bedrock excavated, either for economic purposes (ore) or to access economic deposits (overburden). However, this information is not available for many past actions, present actions, and RFFAs and is not considered to be an accurate indicator across the geology and minerals CESA. Therefore, surface disturbances associated with mines are used to estimate the extent of mining activity and impacts to geology and minerals.

Mineral exploration projects indicate the potential for further development of mineral resources within the geology and minerals CESA. However, because the ultimate extent of impacts cannot be assessed at the exploratory stage, future mine development associated with current exploration activities is not considered for the purposes of assessing cumulative effects on geologic and mineral resources. Boreholes, trenches, and pits completed for mining exploration activities would remove or disturb limited volumes of bedrock.

Other past actions, present actions, or RFFAs within the geology and minerals CESA can contribute to cumulative effects on geology and mineral. These include sand and gravel extraction; utility (natural gas, electric, geothermal) line construction; oil, gas, and geothermal resource extraction; and, to a lesser extent, construction of roads, residential, commercial, and industrial facilities. However, these actions typically create surficial or shallow disturbances that do not affect the overall condition or availability of geology and minerals. Construction of some facilities (e.g., oil and gas facilities, utility lines) can decrease accessibility of some geologic and mineral resources but to a limited extent.



Construction of roads and transmission lines may impact accessibility of resources directly beneath, but can be rerouted if conflicts arise. On the other hand, roads and utility lines may increase the ease of access and stimulate development of geology and minerals. Disturbance associated with oil and gas development, utilities, infrastructure, public purpose projects, wildland fires, restoration, and seeding projects are not included in the disturbance calculations presented below because the impacts are not directly related to geology and minerals.

Oil and gas development within the geology and minerals CESA has been limited historically, and only three acres of associated disturbance has occurred (Table 5.2-1). Similarly, although approximately 110,000 acres of oil and gas leases have been issued that are within or partially overlap the CESA (BLM 2014d, 2014g), development of these leases is not guaranteed and is not considered an RFFA.

### ***5.6.3 Past and Present Activities***

Approximately 783 acres of surface disturbances have occurred within the geology and minerals CESA due to past mining activities at Easy Junior (395 acres), Mount Hamilton (365 acres), and Green Springs (23 acres) mines (Table 5.2-1). Current mining at the Ruby Hill mine has created 1,386 acres of surface disturbances. Past exploration activities at Pan (13 acres) and present exploration at Gold Rock (267 acres), Centennial (2 acres) and Wheeler Ridge (75 acres) have created, or are expected to create, a total of 357 acres of surface disturbances. Approximately 2,686 acres of past and present disturbance in the CESA is due to mining and exploration activities.

Up to 2,172 acres of surface disturbance has occurred under mining Notices of Intent within the Egan and Mount Lewis Field Offices (Section 5.2.1.10). Conservatively assuming that 50 percent of these mining Notices of Intent were within the geology and minerals CESA, approximately 1,086 acres of disturbance occurred within the CESA. Also within the CESA, sand and gravel operations have disturbed 160 acres (Table 5.2-1). Past and present disturbances related to mining and sand and gravel operations within the CESA total 3,772 acres.

### ***5.6.4 Reasonably Foreseeable Future Activities***

Foreseeable future surface disturbances within the CESA due to mining and exploration operations are expected to affect a total of 4,240 acres. These impacts include 650 acres for the Gibellini vanadium mine; 195 acres for the Centennial-Seligman Project and 15 acres for the related access road right-of-way; 3,301 acres for the Pan Project; and 79 acres for various mineral exploration projects (Table 5.2-1).

### ***5.6.5 Cumulative Disturbances***

The CESA for geologic and mineral resources is 499,708 acres of BLM, USFS, and privately-owned lands. Of this, approximately 6,926 acres of surface disturbance has occurred, or is expected to occur, from known and quantifiable mining, exploration, and sand and gravel past, present, and RFFAs. Adding mining NOI disturbance results in a total of 8,012 acres. This disturbance affects approximately 2 percent of the total CESA.

Considering all past, present, and RFFAs in known and quantifiable locations results in approximately 13,365 acres of disturbance within the CESA. Adding the estimated disturbance from mining NOIs results in approximately 14,451 acres, which is almost 3 percent of the total CESA.



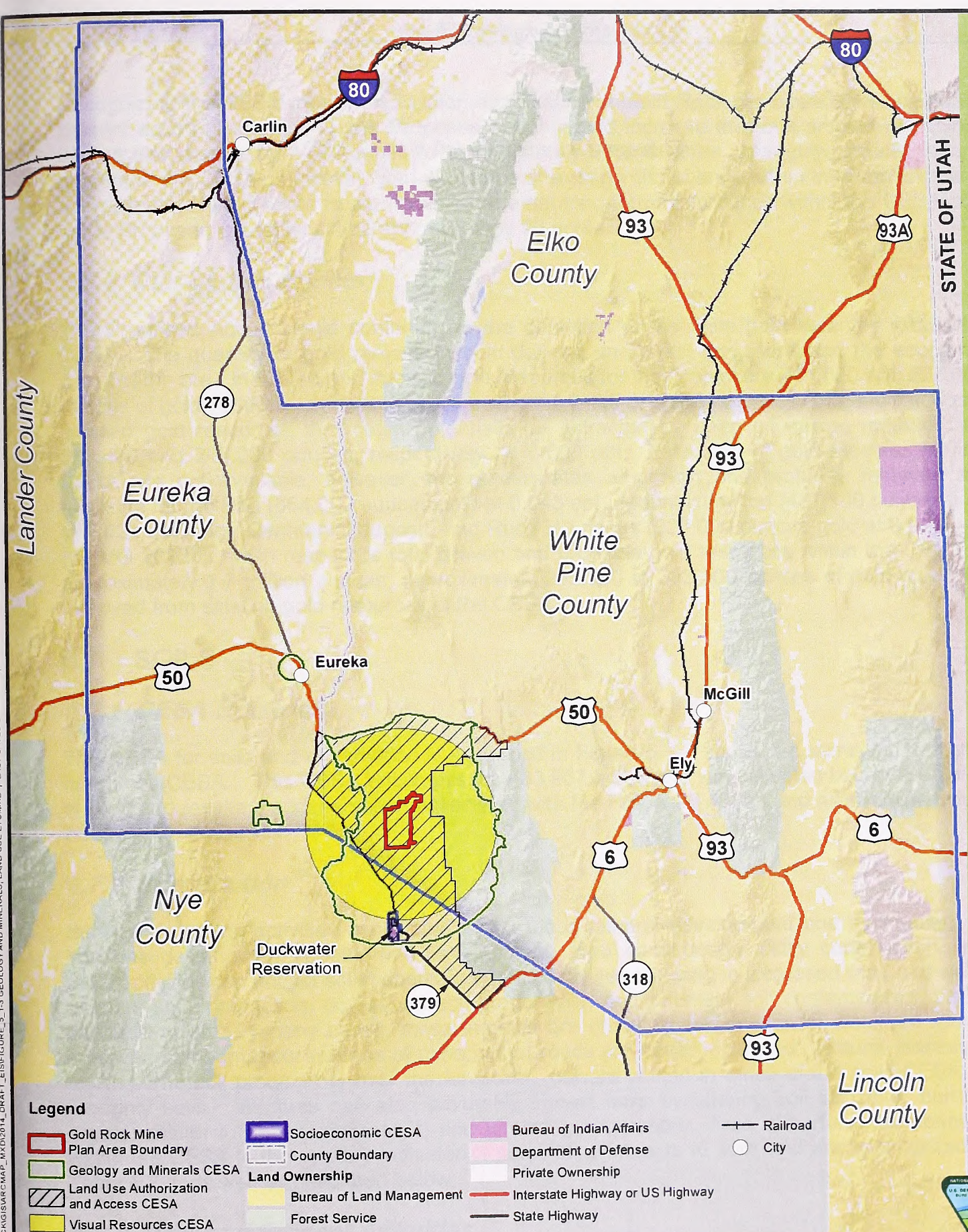
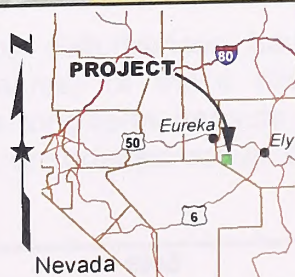


FIGURE 5.1-3  
GEOLOGY AND MINERALS, LAND USE  
AUTHORIZATION AND ACCESS, VISUAL  
RESOURCES AND SOCIOECONOMIC CESAS

MIDWAY GOLD US INC.  
GOLD ROCK MINE PROJECT

MAPPED DATE: 9/21/2014

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Miles



U.S. BUREAU OF LAND MANAGEMENT  
ELY DISTRICT  
EGAN FIELD OFFICE

NO WARRANTY IS MADE BY THE BUREAU OF  
LAND MANAGEMENT AS TO THE ACCURACY,  
RELIABILITY, OR COMPLETENESS OF THESE  
DATA FOR INDIVIDUAL USE OR AGGREGATE  
USE WITH OTHER DATA.

Basemap Source: ESRI World Shade Relief Map Service





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Recognizing that 267 acres of exploration disturbance at Gold Rock are already included as a present action (Table 5.2-1), the Proposed Action would increase the total amount of mining-related disturbance by 3,679 acres to approximately 17,044 acres, or slightly greater than 3 percent of the CESA. However, with 395 acres of existing disturbance within the Plan area and approximately 3,456 acres to be reclaimed, the net long-term disturbance within the CESA due to the Proposed Action would be approximately 96 acres.

### ***5.6.6 Cumulative Effects***

The Proposed Action would contribute to the depletion of the finite gold reserves within the CESA. The quantity of gold removed would depend on market conditions and the economic cutoff of the ore. Indicated and inferred gold resources for the Project are 401,000 and 227,000 ounces of gold, respectively, based on an economic cutoff of 0.006 opt. However, indicated and inferred gold resources that could potentially be extracted by open pit mining methods are 383,000 and 215,000 ounces, respectively, at 0.008 opt. Estimates of gold reserves for the CESA are not available; however, recent estimates of proven and probable reserves are available for the Pan (864,000 ounces gold at 0.043 opt), Mount Hamilton (487,100 ounces gold at 0.022 opt in the Centennial deposit) and Ruby Hill mines (326,000 ounces gold at 0.043 opt) (NBMG 2012b). With respect to total proven and probable gold resources within the CESA of approximately 1.7 million ounces, approximately 215,000 to 383,000 ounces of gold would be removed from existing gold resources of the CESA.

## **5.7 SOILS**

### ***5.7.1 CESA Boundary***

The CESA for soils and reclamation is illustrated in Figure 5.1-2 and is the same as the water resources CESA. This CESA encompasses 483,967 acres and was selected because erosion of soils and resultant sedimentation associated with the Proposed Action and alternatives would be limited to this area.

### ***5.7.2 Introduction***

Surface disturbing activities associated with various mineral development and exploration, oil and gas development, geothermal development, road construction, utility construction, and other activities can impact soil resources. These activities can lead to increased wind and water erosion, soil compaction, decreased soil productivity, and potential soil contamination due to chemical spills. In many cases, these impacts are offset by reclamation of disturbed areas; however, some impacts in areas of mine pits or roads are never reclaimed. Natural processes return some soil productivity over the long-term, but are limited in much of the soils CESA by droughty soils. Wildfires can also adversely impact soils by altering soil structure, burning organic matter in near surface soils, and removing vegetation. Area of surface disturbances within the CESA is the primary indicator of cumulative impacts to soils and are summarized in Table 5.2-1, as well as described below.

### ***5.7.3 Past and Present Activities***

A total of 6,400 acres of past soil disturbances have occurred within the soils CESA. Approximately 75 percent (4,814 acres) of these disturbances have resulted from road construction. Road construction has long-term impacts on soil resources by compacting or burying soils. Compacted soils on unsurfaced roads can increase runoff rates and act as



sediment transport conduits whereas paved or sealed roads are impervious surfaces that concentrate runoff and increase the potential for erosion of soils adjacent to the road.

Past mineral exploration and development activities within the CESA have resulted in a combined disturbance of approximately 796 acres of soils. Past and present sand and gravel operations have disturbed an additional 139 acres. As described for the Proposed Action and other alternatives, impacts to soils from mining activities (e.g., loss of productivity, erosion) are often long-term but can be minimized through successful reclamation practices. Past utility, infrastructure, oil and gas development, and wild land fires have also contributed to previous soil disturbances (Table 5.2-1).

Ongoing mining and oil and gas activities have contributed to overall soil disturbances within the soils CESA. The majority (342 of 352 acres) of disturbance from present actions is associated with the Gold Rock Exploration and Wheeler Ridge Exploration projects. Mineral exploration typically involves road construction, drill pad construction, and excavation of test pits that are relatively small compared to development pits. Exploration impacts include loss of soil productivity, increased erosion, and soil compaction. Reclamation of exploration projects disturbing greater than five acres is required by the Nevada Bureau of Mining Regulation and Reclamation; therefore, total long-term impacts would be less than the total initial disturbance acreage.

#### ***5.7.4 Reasonably Foreseeable Future Activities***

Foreseeable future soil disturbances within the soils CESA are expected to affect a total of 3,863 acres. These impacts include 3,301 acres for the Pan Project; 195 acres for the Centennial – Seligman Mining and Exploration Project and 15 acres for the related access road right-of-way; 79 acres for mineral exploration projects; and one acre associated with the Strawberry 69kV Transmission Line (Table 5.2-1).

The amount of reasonably foreseeable future wild land fire that will occur in the soils CESA is unknown and not quantifiable; therefore, it was not considered for this analysis.

#### ***5.7.5 Cumulative Disturbances***

The soils CESA includes approximately 483,967 acres of BLM, USFS, and privately-owned lands. Of this, approximately 10,615 acres of disturbance has, or is expected to occur from known and quantifiable past, present, and RFFAs. This represents a disturbance of approximately 2 percent of the total CESA. Existing road and utility networks would be used by some projects to co-locate facilities, decreasing the need for further disturbances. Recognizing that 267 acres of exploration disturbance at Gold Rock are already included as a present action (Table 5.2-1), the Proposed Action would increase the total amount of disturbance by approximately 3,679 acres to approximately 14,294 acres, or approximately 3 percent of the CESA. However, with 395 acres of existing disturbance within the Plan area and approximately 3,456 acres to be reclaimed, the net long-term disturbance within the CESA due to the Proposed Action would be approximately 96 acres.

#### ***5.7.6 Cumulative Effects***

The Proposed Action and alternatives would impact soil resources within the soils CESA, mainly during construction and topsoil salvage activities. Cumulative effects to soils would include decreased soil productivity and resistance to erosion. These effects would be long-term. Most impacts would occur in areas where soils are severely prone to erosion; however, sediment



transport and sedimentation in nearby drainages due to precipitation and snowmelt runoff would be minimized by use of stormwater diversions, sediment retention basins, and BMPs. Past actions may have resulted in similar impacts. Some areas disturbed have not been fully reclaimed and may remain impacted. All present actions and RFFAs within the CESA that occur on BLM and USFS land would be required to implement BMPs similar to those implemented for the Proposed Action.

## **5.8 PRIME AND UNIQUE FARMLAND**

### ***5.8.1 CESA Boundary***

The CESA for prime and unique farmlands is shown on Figure 5.1-2 and is the same as the water resources CESA. The total area of this CESA is 483,967 acres of land, of which approximately 8,603 acres (1.8 percent) are classified as prime farmland if irrigated and reclaimed of excess salts and sodium. Based on the analysis conducted in Section 4.6, approximately 3 acres of prime farmland soils would be impacted by the Proposed Action. This disturbance or loss of 3 acres of Prime Farmland would represent a loss of less than 0.03 percent of the prime farmlands within the CESA.

### ***5.8.2 Introduction***

The main impact to prime farmland soils is disturbance of the ground surface which could adversely affect productivity of soils or result in long term displacement of prime farmland soils by project facilities. Cumulative effects to prime farmlands in the CESA primarily occur from mining and exploration activities, sand and gravel extraction operations; agriculture; oil and gas development; roads; and wild land fires. These activities often modify landscapes and could displace prime farmlands or affect productivity. Acres of disturbance in the sections below are presented in Table 5.2-1.

It is important to note that the disturbance numbers addressed throughout this section relate specifically to surface disturbance. In the case of soils, the amount of surface disturbance may or may not directly relate to impacted prime farmland soils. Information was not available for other projects to allow direct comparison of specific impacts to prime farmlands across the CESA.

### ***5.8.3 Past and Present Disturbances***

Past and present disturbances within the CESA total approximately 6,400 acres. Past and present mineral development and exploration projects within the CESA include the 2007 Wild land Fire, Easy Junior Mine, Gold Rock Exploration, Wheeler Ridge Exploration Project, Green Springs Mine, Pan Mine Exploration Project, the Cathedral Canyon Exploration Project, and Centennial Exploration Project.

There are approximately 139 acres of disturbance associated with past and present sand and gravel operations and approximately 3 acres of disturbance associated with oil, gas, and geothermal development projects within the CESA. In addition, there are approximately 4,814 acres of disturbance associated with roads within the CESA (Table 5.2-1).

### ***5.8.4 Reasonably Foreseeable Future Disturbances***

There are a total of 3,863 acres of foreseeable future disturbances within the CESA, including the Pan Mine Project; the Centennial-Seligman Mining and Exploration Project and related



access road right-of-way; the Green Springs Mineral Exploration Project; the Griffon Mine Exploration Project; and the Strawberry 69 kV Transmission Line.

### ***5.8.5 Cumulative Disturbances***

The prime farmlands CESA includes approximately 483,967 acres of BLM, USFS, and privately-owned lands. Of this, approximately 10,615 acres of disturbance has, or is expected to occur from known and quantifiable past, present, and RFFAs. This represents a disturbance of approximately 2 percent of the total CESA. Existing road and utility networks would be used by some projects to co-locate facilities, decreasing the need for further disturbances. Recognizing that 267 acres of exploration disturbance at Gold Rock are already included as a present action (Table 5.2-1), the Proposed Action would increase the total amount of disturbance by approximately 3,679 acres to approximately 14,294 acres, or approximately 3 percent of the CESA. However, with 395 acres of existing disturbance within the Plan area and approximately 3,456 acres to be reclaimed, the net long-term disturbance within the CESA due to the Proposed Action would be approximately 96 acres.

### ***5.8.6 Cumulative Effects***

Some past activities and reclamation actions have resulted in loss of soils and long-term soil productivity. Extraction and exploration of mineral resources could directly displace prime farmlands or reduce soil productivity as a result of erosion and soil compaction. All present actions and RFFAs within the CESA that occur on BLM and USFS land would be subject to BMPs to minimize erosion from storm water runoff.

## **5.9 AIR RESOURCES**

### ***5.9.1 CESA Boundary***

The CESA for air quality is shown on Figure 5.1-2 and encompasses a 50 km grid (617,760 acres) centered on the Plan area. The CESA for air was defined by the BLM and, based on the grid typically used for air modeling and the anticipated extent of air impacts from project activities.

### ***5.9.2 Introduction***

Data from the closest ambient air quality monitoring station, located approximately 120 miles north of the Plan area in Elko County, indicate that air quality is excellent (BLM 2012a). Therefore, excellent air quality generally exists in the air quality CESA. Cumulative impacts to air quality in the CESA from past, present, and RFFAs are largely from fugitive dust generated by mining activities, utility construction, infrastructure development such as road construction and improvements, public projects such as landfill construction, oil and gas operation an exploration, wild land fire, and vehicle travel on unpaved roads. Travel on unpaved roads in the CESA can affect air quality from vehicle emissions and fugitive dust, but this type of use has not affected air quality measurably in the past and is not considered a concern (BLM 2013c). The nearest Class I area is the Jarbidge Wilderness Area, which is located approximately 160 miles north of the Plan area.

### ***5.9.3 Past and Present Actions***

Historical activities in the air quality CESA have included mining and mineral exploration activity; oil and gas exploration and development; and gravel pit, utility and infrastructure



development (Table 5.2-1). Historical vegetation management efforts have included grazing and limited prescribed burning (BLM 2013c). Table 5.2-1 shows surface disturbance for the past actions, present actions, and RFFA. This cumulative impact analysis is based primarily on air quality emissions from surface disturbance. In addition to acres of disturbance quantified in Table 5.2-1, prescribed burns have periodically occurred in the CESA. Smoke generated during prescribed burns has intermittent impacts on local air quality, but prescribed burns prevent more significant impacts of larger, potentially catastrophic fires that could otherwise occur. The projects identified for the cumulative analysis account for surface disturbance and fugitive dust emissions on both short- and long-term bases.

There is ongoing mining exploration occurring within the CESA including Centennial Exploration Project, Gold Rock Exploration Project, and Wheeler Ridge Exploration Project. There is limited ongoing exploration for oil and natural gas (3 acres) in the air quality CESA (Table 5.2-1). "Most of the described ongoing activities, with the possible exception of the oil and gas development, occur in higher elevations. Land management agencies maintain grazing programs with the goal of maintaining vegetation integrity, which can help minimize dust generation. The agencies are becoming more aggressive in using prescribed fires as a land management tool (BLM 2013c).

#### ***5.9.4 Reasonably Foreseeable Future Actions***

Reasonably foreseeable future actions in the air quality CESA are similar to those that are presently occurring and include mining, mineral exploration and utility development. "Most activities, with the exception of gravel pits and potential oil and gas development, are or would be at elevations well above the valleys where sensitive receptors (human residences) are located. Past, present and reasonably foreseeable gravel production generates dust that could lead to moderate impacts in the immediate vicinity. Those activities are generally at lower elevations" (BLM 2013c).

The BLM has issued a number of oil and gas leases within the valley floor locations (BLM 2013c) of the air quality CESA; however, planned oil and gas activity within the CESA has declined in recent years (BLM 2014d, Hummer 2014). Drilling activities typically last for several weeks. Exploration of oil and gas in the CESA has the potential to have moderate impacts to cumulative air quality over the short-term. The development or expansion of oil and gas wells could have an impact over the long-term.

Ground disturbances and construction activity could have a moderate impact on air quality approximately one mile downwind from the well site and within approximately 100 yards of primary access routes (BLM 2013c). During exploratory activities, diesel engines power the drill rig and natural gas is either vented or flared off. Flaring or gas venting at sites that show development potential could result in moderate air quality impacts within approximately one half mile from the well (BLM 2013c). Production of oil and gas would be for the life of the well which could be decades. The extent of moderate impacts from a production well site depends on the volume of oil or gas found, how it is stored or processed on-site, how it is transported off-site, and whether well production equipment must be run on electricity, diesel, or gas. Production wells beyond moderate size are not expected in or near the CESA. The area of moderate impact for potential oil and gas field development and production would be estimated to be limited to within a two- mile radius around developed well sites and within 100 yards of primary access routes (BLM 2013c). The current ongoing exploration for oil and natural gas (3 acres) in the CESA is small.



BLM decisions, including prescribed burns and energy development, could affect air quality in the CESA. Prescribed burns would be expected to have little effect regionally, but could affect local air quality intermittently and over the short-term.

### ***5.9.5 Cumulative Disturbances***

Projects involving ground disturbing activities would contribute to cumulative fugitive dust emissions. Ground disturbing activities would occur in the air quality CESA from existing and foreseeable projects and from the proposed project. Total ground disturbance for existing and foreseeable projects is presented in Table 5.2-1.

### ***5.9.6 Cumulative Effects***

Impacts to air quality would occur in the air quality CESA from existing and foreseeable projects and from the proposed project. The air quality impacts from ground disturbing activities are typically localized for all but the largest areas of disturbance (BLM 2013c). Land management activities, regional growth, and intermittent actions, such as wild land fire, could be expected to result in impact.

Excellent air quality generally exists in the CESA. Considering the emissions from the RFFAs described above, impacts to regional air quality are not expected. Therefore, cumulative air quality impacts from RFFAs in the CESA are not anticipated.

Existing conditions for Climate Change are described in Section 3.7. Project-related GHG emissions are likely dominated by fugitive sources. Impacts from project-related GHG emissions are anticipated to contribute to the total volume of GHGs in the air quality CESA and in the region. GHG emissions from the Proposed Action are also anticipated to contribute to total GHG emissions in Nevada, the United States, and globally.

## **5.10 VEGETATION, INCLUDING NOXIOUS AND NON-NATIVE, INVASIVE WEEDS AND SPECIAL STATUS PLANTS**

### ***5.10.1 CESA Boundary***

The CESA boundary for vegetation including noxious and non-native, invasive weeds and special status plants is shown on Figure 5.1-2 and is the same as the water resources CESA. The total area of this CESA is 483,967 acres. This CESA boundary was chosen because cumulative effects would be limited to this area.

### ***5.10.2 Introduction***

Disturbance within the vegetation CESA primarily includes mining and exploration, exploration notices, sand and gravel extraction operations, utility lines, oil and gas development, roads, and wild land fires. Disturbance associated with these actions involves vegetation clearing, which promotes the establishment of noxious and non-native species. Vegetation species within the CESA are common and widespread throughout Nevada. Areas of surface disturbance in the sections below are presented in Table 5.2-1. Past and present actions within the vegetation CESA have likely resulted in some negative impacts to vegetation.



### **5.10.3 Past and Present Disturbances**

Past mineral development and exploration actions within the CESA includes the Easy Junior Mine, Mount Hamilton Mine, Green Springs Mine, and Pan Project exploration for a combined disturbance of approximately 796 acres. Although the acreage associated with these projects has not been actively reclaimed, natural reclamation of vegetation species has likely occurred over time resulting in various levels of vegetation. Present mineral development and exploration actions within the CESA include several active mines and mineral exploration projects, including Centennial Exploration Project, Gold Rock Exploration Project, Wheeler Ridge Exploration Project, and Cathedral Canyon Exploration Project, which represent an additional 349 acres of disturbance. Finally, an additional 139 acres of disturbance within the CESA are due to past and present sand and gravel mining operations. In total, there is approximately 1,284 acres of past and present disturbance associated with mineral development and exploration activities in the CESA.

In addition to mineral development, approximately 6 acres within the CESA have been disturbed or are presently being disturbed for oil and gas development. Impacts of mineral and oil and gas development and exploration can be long-term; however reclamation of vegetation species, whether natural or man-made, will eventually occur. Noxious and non-native, invasive weed species are more likely to establish in disturbed areas; therefore, successful reclamation assists to limit the spread of these species.

Utility related disturbance within the CESA includes the El Dorado to Farm Area Power Line which runs along the northwest corner of the CESA for a total of approximately 53 acres of disturbance. Additionally the Silver State fiber optic line is located along US 50 at the northern boundary of the CESA for a total of 18 acres of additional past disturbance. A total of 71 acres within the CESA have been previously disturbed for utility projects. While these types of disturbances do not typically result in a loss of land access, vegetation clearing from construction of utilities and access roads increases the likelihood of noxious and non-native, invasive species establishment. After construction of these projects, access roads remain maintained which creates a minor, long-term impact to vegetation in the CESA. These roads may be also used by those who would not have otherwise traveled to these locations (i.e., recreational use), which may lead to the spread and establishment of noxious and non-native, invasive species.

There are approximately 4,814 acres of disturbance associated with roads within the CESA (Table 5.2-1). Establishment of roads effects vegetation for the long-term. Areas disturbed by vehicles are often slower to reestablish because the soils have been compacted. Noxious and non-native, invasive species are typically the first species to establish, especially along road corridors and where vehicles travel off road. Vehicles that travel off road spread seeds of noxious and non-native, invasive species. Roads create access into areas that might not otherwise be accessible. This increases the risk of off- highway vehicle use which has a greater likelihood of spreading seeds of noxious and non-native, invasive species.

Approximately 577 acres of the CESA has previously burned as a result of wild land fire. Burned areas result in patched landscapes that create natural fire breaks and diversify habitat for wildlife; however, often burned landscapes become dominated by noxious and non-native, invasive species.



#### **5.10.4 Reasonably Foreseeable Future Disturbances**

Reasonably foreseeable future disturbances within the CESA include approximately 75 acres of disturbance associated with Green Springs Mineral Exploration Project; approximately 195 acres of exploration associated with the Centennial-Seligman Mining and Exploration Project and 15 acres related to the access road right-of-way; approximately 3,301 acres associated with the Pan Project; four acres associated with the Griffon Mine Exploration Project, and one acre associated with the Strawberry 69kV transmission line. Disturbance as a result of these proposed activities would likely result in vegetation removal of 3,591 acres.

The amount of wild land fire that could occur within the reasonably foreseeable future within the CESA is unknown and not quantifiable; therefore, it was not considered for this analysis.

An additional factor that should be described is the potential impacts to vegetation from climate change. Based on available information within the project area, there will be a general shift in areas of Great Basin Pinyon-Juniper Woodland towards the various sage-brush dominated ecological systems (Great Basin Xeric Mixed Sagebrush Shrubland, Intermountain Basins Big Sagebrush Shrubland, Intermountain Basins Big Sagebrush Steppe). In turn, these sage-brush ecological systems will tend to shift towards Intermountain Basins Mixed Salt Desert Scrub (Provencher and Anderson 2011). In addition to these changes, an increase in uncharacteristic vegetation types (vegetation that varies significantly from the reference condition and are caused by anthropogenic disturbances) is expected in Great Basin Pinyon-Juniper Woodland, Great Basin Xeric Mixed Sagebrush Shrubland and Intermountain Basins Big Sagebrush Shrubland, while ecological disturbance is likely to decrease in Inter-Mountain Basins Montane Sagebrush Steppe and Intermountain Basins Mixed Saltbrush Scrub (Provencher and Anderson 2011, Wildlife Action Plan Team 2012). A climate change-associated increase in fire frequency will also have the potential to impact vegetation resources. While the impacts of climate change cannot be directly quantified, impacts to vegetation from climate change are taken into consideration when evaluating the cumulative impacts to vegetation types throughout the CESA.

#### **5.10.5 Cumulative Disturbances**

The CESA for vegetation including noxious and non-native, invasive weeds and special status plants is approximately 483,967 acres of BLM, USFS, and privately-controlled lands. Of the 483,967 acres covered by the CESA, approximately 10,615 acres of disturbance are associated with past actions, present actions, and RFFAs, which is a disturbance of approximately 2 percent of the CESA. Recognizing that 267 acres of exploration disturbance at Gold Rock are already included as a present action (Table 5.2-1), the Proposed Action would increase the disturbance within the CESA by 3,679 acres to approximately 14,294 acres, or approximately 3 percent of the CESA. However, with 395 acres of existing disturbance within the Plan area and approximately 3,456 acres to be reclaimed, the net long-term disturbance within the CESA due to the Proposed Action would be approximately 95 to 96 acres.

#### **5.10.6 Cumulative Effects**

The vegetation community types found within the vegetation CESA are common and widespread throughout the CESA.

Cumulative effects to vegetation including noxious and non-native, invasive weeds and special status plants from all alternatives and past, present, and RFFA disturbances could include changes in vegetation composition, spread of noxious or non-native invasive species, increased erosion potential, and displacement of some types of activity (range use, recreation).



Vegetation could be further impacted by climate change, which could make reclamation of sagebrush habitat more difficult and could impact the spread of noxious weeds. For those projects with a federal nexus, implementation of environmental protection measures or BMPs, reclamation, and continued monitoring until successful establishment of vegetation species within disturbed areas would result in improved vegetation composition, limit the spread and establishment of noxious and non-native invasive species, and reduce erosion potential within the CESA.

## **5.11 WILDLIFE RESOURCES, INCLUDING SPECIAL STATUS WILDLIFE AND MIGRATORY BIRDS**

### **5.11.1 CESA Boundary**

The wildlife CESAs include the following:

- General wildlife other than special status small mammals and fish, big game, migratory birds, eagles, and greater sage-grouse: Hunt Unit 131 (998,955 acres)
- Special status small mammals and fish: Groundwater sub-basin 154 (Newark Valley) north approximately 15 miles to US 50 and groundwater sub-basin 173B (Railroad Valley/, Northern Part) south approximately 15 miles to the Duckwater Shoshone Reservation (water resources CESA) (483,967 acres)
- Mule deer: Hunt Units 131, 132, 133, 134 (these 4 units make up Area 13), and Hunt Unit 108 in Area 10, north of US 50 (4,262,792 acres)
- Elk: Hunt Units 131, 132, and a portion of Hunt Unit 108 south of the Falcon to Gondor power line (2,205,883 acres)
- Pronghorn antelope: Hunts Units 131, 145, 163, and 164 (2,816,033 acres)
- Bighorn sheep: Hunt Units 131, 164 (1,744,450 acres)
- Migratory birds and eagles: Plan area and 10-mile buffer and power line routes for the Proposed Action and alternatives (484,411 acres)
- Greater sage-grouse: Four NDOW greater sage-grouse population management units - Butte/Buck/White Pine, Diamond, Monitor, and Quinn (1,727,788 acres)

These CESAs (Figure 5.1-4) were used to analyze effects to wildlife because they incorporate the wildlife habitat within and adjacent to the Plan area where most of the impacts may occur from the Proposed Action (Section 4.8.2).

### **5.11.2 Introduction**

#### **General Wildlife**

Past and present actions within Hunt Unit 131, which is the CESA for general wildlife, have likely been both positive and negative, to varying degrees, on wildlife. The foremost effect to wildlife within the area has been habitat changes associated with past and present mineral development and exploration activities, and grazing (Table 5.2-1). Other effects that are not quantified have included the majority of historical mineral development and exploration, noise disturbance/displacement from mineral development and exploration, roads, and recreational activities.



Effects related to land use include loss of habitat, displacement, and fragmentation as a result of mineral development and exploration, roads, fuels treatments, and recreation. Specific to small and less mobile wildlife species (i.e., small mammals, amphibians, and reptiles), past effects from direct crushing and mortality by livestock, large wild ungulates, and vehicles would likely also occur within the CESA. In addition, grazing can contribute effects by increasing competition for forage and changes in the structure or composition of native plant communities. Grazing within the wildlife CESA is conducted in compliance with standards and guidelines contained in the Ely District Approved Resource Management Plan (BLM 2008b).

### **Special Status Small Mammals and Fish**

Past and present actions within the southern portion of the Newark Valley groundwater basin and northern portion of the Railroad Valley/Northern Portion groundwater basin, which is the CESA for special status small mammals and fish, are similar to those for general wildlife.

Effects related to land use are similar to those for general wildlife.

### **Big Game**

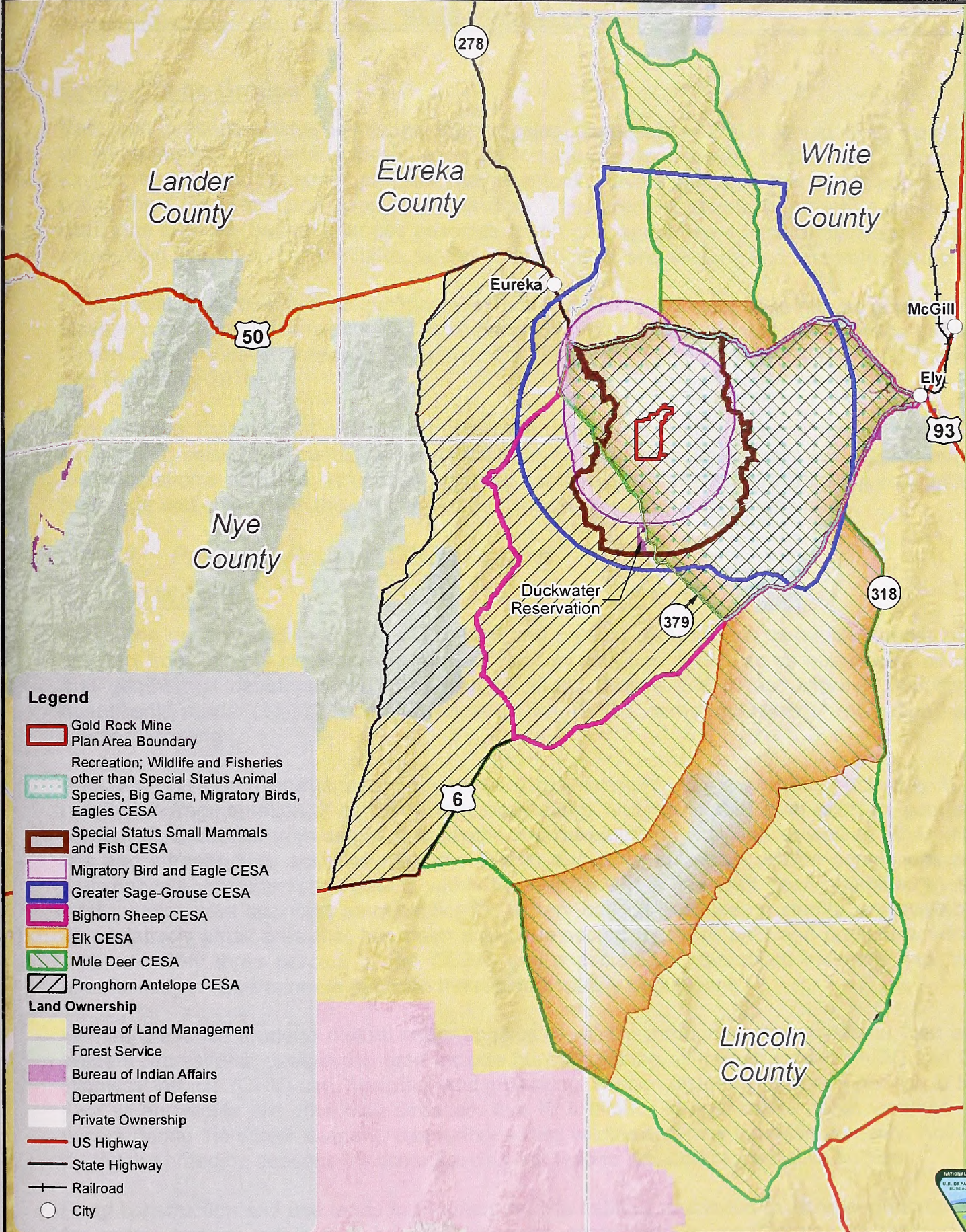
Past and present actions within all of the big game CESAs (i.e. Hunt Units) have likely resulted in negative impacts, at various levels, on big game. Habitat removal and fragmentation have likely been the most prominent impacts to big game in the CESAs. Habitat changes and fragmentation have been associated with past and present mineral development and exploration activities, roads and utilities, wild land fire, and urban development. Other effects that are not quantified include historic mineral development and exploration, roads, and recreational activities. In addition, grazing can contribute by increasing competition for forage and can result in changes in the structure or composition of native plant communities.

### **Migratory Birds and Golden Eagles**

Past and present actions within the CESA for migratory birds and golden eagles have likely resulted in both beneficial and negative impacts, at various levels, on birds. The foremost effect to migratory birds and eagles within the area has been habitat changes associated with past and present mineral development and exploration activities, and grazing. Other effects that are not quantified have included the majority of historic mineral development and exploration, noise disturbance/displacement from mineral development and exploration, roads, and recreational activities.

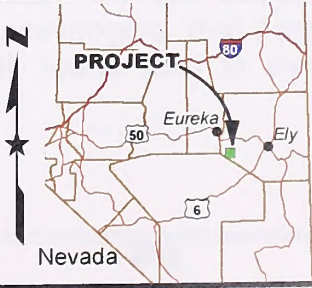
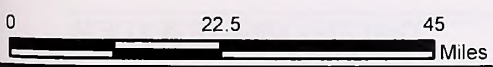
Effects related to land use include loss of habitat, displacement, fragmentation, and nest disturbance as a result of mineral development and exploration, roads, fuels treatments, and recreation. Specific to ground-nesting birds, past effects from direct crushing and mortality by livestock, large wild ungulates, and vehicles would likely also occur within the CESA. Collisions with power lines and vehicles have also likely affected migratory birds and eagles in the CESA. In addition, grazing can contribute to effects by changing the structure or composition of native plant communities. Grazing within the wildlife CESA is conducted in compliance with standards and guidelines contained in the Ely District Approved Resource Management Plan (BLM 2008b).





- Legend**
- Gold Rock Mine Plan Area Boundary
  - Recreation; Wildlife and Fisheries other than Special Status Animal Species, Big Game, Migratory Birds, Eagles CESA
  - Special Status Small Mammals and Fish CESA
  - Migratory Bird and Eagle CESA
  - Greater Sage-Grouse CESA
  - Bighorn Sheep CESA
  - Elk CESA
  - Mule Deer CESA
  - Pronghorn Antelope CESA
  - Land Ownership**
  - Bureau of Land Management
  - Forest Service
  - Bureau of Indian Affairs
  - Department of Defense
  - Private Ownership
  - US Highway
  - State Highway
  - +— Railroad
  - City

**FIGURE 5.1-4**  
**WILDLIFE AND RECREATION CESAs**  
**MIDWAY GOLD US INC.**  
**GOLD ROCK MINE PROJECT**  
 MAPPED DATE: 10/17/2014



U.S. BUREAU OF LAND MANAGEMENT  
 ELY DISTRICT  
 EGAN FIELD OFFICE

NO WARRANTY IS MADE BY THE BUREAU OF LAND MANAGEMENT AS TO THE ACCURACY, RELIABILITY, OR COMPLETENESS OF THESE DATA FOR INDIVIDUAL USE OR AGGREGATE USE WITH OTHER DATA.

Basemap Source: ESRI World Shade Relief Map Service

PATH: Z:\GIS\PROJECTS\ENV\CO01817\_GOLDROCK\GIS\ARCMAP\_MXD\2014\_DRAFT\_LEIS\FIGURE\_5-14\_WILDLIFE\_AND\_RECREATION\_CESAs\_V10172014.MXD | LAST SAVED BY: JCHEN | LAST SAVED ON: 10/17/2014 2:42:30 PM



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## **Greater Sage-Grouse**

Past and present actions within the four greater sage-grouse PMUs would likely result in negative impacts, at various levels, on greater sage-grouse although some, such as pinyon-juniper removal and reclaimed projects, may eventually have a positive effect on the populations within the CESA, and particularly their habitats. The foremost effects to greater sage-grouse within the area are habitat changes associated with past and present mineral development and exploration activities, roads, utilities, fences, wild land fire, and seeding and restoration projects.

Nest predation by common ravens may also have an effect on greater sage-grouse populations. Ravens can have substantial predatory impacts on prey species such as greater sage-grouse. Raven numbers have increased 300 percent in the western United States since 1980 (Coates and Delehanty 2010).

Other effects that are not quantified include the majority of historic mineral development and exploration, noise disturbance/displacement from mineral development and exploration, roads, and recreational activities. In addition, grazing can contribute effects by increasing competition for forage and changes in the structure or composition of native plant communities.

### ***5.11.3 Past and Present Disturbances***

#### **General Wildlife**

Within the general wildlife CESA, major past and present disturbances to wildlife habitat have resulted from mineral development and exploration activities (9,551 acres quantified), oil gas and geothermal development (60 acres quantified), utilities and infrastructure (1,982 acres quantified), roads (11,773 acres), wild land fire (5,335 acres quantified), recreation, and livestock grazing.

Past and present disturbances from mineral development and exploration activities have resulted in fragmentation of certain wildlife populations and their habitats. In addition, past and present disturbances from oil/gas and geothermal development activities as well as other utility line and infrastructure activities have resulted in disruption of certain wildlife populations and their habitats. Fragmentation effects within the wildlife CESA have not been quantified by the land management agencies as quantification is very difficult because no studies are available. The relatively small area that has been directly impacted by these past and present activities (approximately three percent of the CESA) and associated, unquantified indirectly impacted area is likely to have minor impacts on the region's wildlife populations.

Human presence tends to disturb many species of wildlife throughout their habitats. Past and present recreational uses in the area include hunting, fishing, all-terrain vehicle (ATV) and Off Highway Vehicle (OHV) use, camping, and picnicking. Human disturbance during periods of the year when wildlife are otherwise stressed, due to a lack of forage and/or harsh weather (as occurs during the winter season), can further stress wildlife and may increase mortality. Activity during the breeding seasons for some species can lead to reduced reproductive success.

Road construction and use tends to fragment wildlife habitats and leads to increased mortalities for certain species within their habitats. However, some positive impacts may be realized by those species, such as raptors and scavengers, that benefit from increased carrion (i.e., road kill) within their habitats. In general, roads lead to increased direct mortality from vehicle collisions.



In general, wildlife are affected by livestock grazing due to competition for forage, direct mortality by trampling (i.e., amphibians and reptiles or nests of small mammals), and habitat removal/conversion. Reduction in grass understory and change in vegetation composition can also impact nesting success, predation, and wildfire regimes. Proper rotation and stocking rates can minimize impacts to wildlife.

### **Special Status Small Mammals and Fish**

Within the CESA for special status small mammals and fish, major past and present disturbances to wildlife habitat have resulted from mineral development and exploration activities (1,284 acres quantified), oil gas and geothermal development (6 acres quantified), utilities and infrastructure (71 acres quantified), roads (4,759 acres), wild land fire (577 acres quantified), recreation, and livestock grazing.

### **Big Game**

Past and present disturbances from mineral development and exploration activities have resulted in fragmentation of big game ranges. Fragmentation effects in the CESAs have not been quantified by the land management agencies as quantification is difficult due to lack of available studies. Past and present disturbances from oil/gas and geothermal development activities as well as other utility line activities have likely resulted in disruption of big game populations. Total quantified past and present disturbances on big game are as follows: bighorn sheep (35,848 acres), elk (53,738 acres), mule deer (145,360 acres), and pronghorn antelope (49,807 acres).

Human presence tends to disturb big game throughout their habitats. Big game may also be subject to traffic collisions, particularly during migration. Past and present recreational uses in the area include hunting, fishing, all-terrain vehicle (ATV) and Off Highway Vehicle (OHV) use, camping, and picnicking. Human disturbance during periods of the year when big game are otherwise stressed, due to a lack of forage and/or harsh weather (as occurs during the winter season), can further stress wildlife and may increase mortality. Activity during the breeding seasons for some species can lead to reduced reproductive success.

In general, big game species are affected by livestock grazing due to competition for forage and habitat removal/conversion. Proper rotation and stocking rates can minimize impacts to big game.

### **Migratory Birds and Golden Eagles**

Within the migratory bird and eagle CESA, major past and present disturbances to wildlife habitat have resulted from mineral development and exploration activities (1,381 acres quantified), oil gas and geothermal development (21 acres quantified), utilities and infrastructure (229 acres quantified), wild land fire (439 acres quantified), roads (5,313 acres), recreation, and livestock grazing.

Past and present disturbance affecting migratory birds and golden eagles has likely been similar to the effects described above for general wildlife and special status small mammals and fish. Impacts from past and present actions on migratory birds and golden eagles include vegetation removal which reduces potential habitat, forage and nesting area. Direct and indirect impacts from past and present actions include the addition of tall structures on the landscape (e.g., power lines) that may provide perching and nesting substrates, but also potentially pose a collision hazard to raptors, eagles, and other migratory birds.



Human activity and presence in the CESA, as well as the presence of livestock, may result in nest disturbance and trampling of ground-nesting birds. Past and present disturbance and associated impacts on migratory bird populations has been minimized with the implementation of the MBTA as amended in 1972. Any disturbance that has occurred or is currently occurring within the migratory bird breeding season would require pre-construction surveys to identify nesting migratory birds prior to surface disturbance. Similarly, past and present activities occurring in the migratory bird and eagle CESA have had to comply the BGEPA as amended in 1962. The requirement for past and present activities to comply with the BGEPA has limited direct disturbance to nesting eagles in the CESA.

### **Greater Sage-Grouse**

Within the four greater sage-grouse PMUs comprising the greater sage-grouse CESA, past and present disturbances to greater sage-grouse habitat have resulted from the following: mineral development and exploration activities (5,882 acres quantified); oil/gas and geothermal activities (117 acres); utilities, infrastructure and public purpose activities (1,639 acres); roads (17,769 acres); wild land fire (23,126 acres); recreation; and livestock grazing.

Past and present disturbances from urban development, mineral development/exploration, oil/gas, and geothermal development activities can result in fragmentation of greater sage-grouse populations and their habitats. Effects from these activities cause increased ambient noise levels, which may have disturbed greater sage-grouse breeding, nesting, and brood rearing behavior. Direct mortalities and further habitat fragmentation from roads associated with these activities may have also occurred. Effects from these activities within the CESA have not been quantified by the land management agencies as quantification is very difficult.

Past and present disturbances from utilities, infrastructure and public purpose activities as well as other utility line activities have resulted in disruption of certain wildlife populations and their habitats, including greater sage-grouse. The relatively small area that has been directly impacted by these past and present activities would likely result in minor and in some cases temporary impacts. Activities such as utility lines also have indirect effects on greater sage-grouse, as greater sage-grouse tend to avoid habitat near tall structures and thus may be displaced over a wider area than the footprint of direct disturbance (Schroeder 2010). Habitat disturbance and displacement along linear corridors may result in fragmentation of formerly contiguous greater sage-grouse habitat. Fragmentation effects within the CESA have not been quantified by the land management agencies as quantification is very difficult.

Road construction and use tends to fragment wildlife habitats and leads to increased mortalities for greater sage-grouse within their habitats. Mortalities may be direct from vehicle collisions or indirect from habitat fragmentation effects or other repercussions such as increased ambient noise levels which may lead to habitat avoidance or interfere with breeding activities.

Human presence in the form of recreation tends to disturb many species of wildlife throughout their habitats. Past and present recreational uses in the area include hunting, shed antler hunting, fishing, ATV/OHV use, camping, and picnicking. Human disturbance during periods of the year when wildlife are otherwise stressed, due to a lack of forage and/or harsh weather (as occurs during the winter season), can further stress wildlife and may increase mortality.

Wild land fire alters greater sage-grouse habitat and leads to conversion from sagebrush dominant vegetation cover types to invasive annual grassland monocultures which have little or no value to the species. Wild land fire may fragment areas of suitable sagebrush habitat and lead to increased direct and indirect mortalities of greater sage-grouse within their habitats. Reseeding and restoration activities post wild land fire may have positive results on greater



sage-grouse habitats although the effects from these activities are often not realized for many years until desirable plants have had an opportunity to become established.

In general, greater sage-grouse can be affected by livestock grazing due to competition for forage and habitat removal/conversion. Reduction to grass understory can also impact nesting success, predation, and wildfire regimes. Proper rotation and stocking rates can minimize impacts to wildlife, including greater sage-grouse.

### **5.11.4 Reasonably Foreseeable Future Disturbances**

#### **General Wildlife**

Reasonably foreseeable future disturbances within this CESA include mineral development and exploration (3,590 acres quantified) and utilities and infrastructure (273 acres quantified). These activities may lead to displacement and habitat fragmentation for wildlife. Fragmentation effects within the CESA have not been quantified by the land management agencies as quantification is very difficult. Impacts from RFFAs would include vegetation removal which may reduce potential habitat, forage and nesting area.

Climate change is also anticipated to affect wildlife in the CESA in the reasonably foreseeable future through changes in habitat types. It is anticipated that there will be a general shift in areas of Great Basin Pinyon-Juniper Woodland towards the various sagebrush dominated ecological systems (Great Basin Xeric Mixed Sagebrush Shrubland, Intermountain Basins Big Sagebrush Shrubland, Intermountain Basins Big Sagebrush Steppe). In turn these sagebrush communities will tend to shift towards Intermountain Basins Mixed Salt Desert Scrub (Provencher and Anderson 2011).

In addition to these changes, an increase in uncharacteristic vegetation types (vegetation that varies significantly from the reference condition and are caused by anthropogenic disturbances) is expected in Great Basin Pinyon-Juniper Woodland, Great Basin Xeric Mixed Sagebrush Shrubland and Intermountain Basins Big Sagebrush Shrubland, while ecological disturbance is likely to decrease in Inter-Mountain Basins Montane Sagebrush Steppe and Intermountain Basins Mixed Salt Desert Scrub (Provencher and Anderson 2011, Wildlife Action Plan Team 2012). While the impacts of climate change cannot be directly quantified, impacts to wildlife from climate change are taken into consideration when evaluating the cumulative impacts to wildlife throughout the CESA.

#### **Special Status Small Mammals and Fish**

Reasonably foreseeable future disturbances within this CESA are similar to those for general wildlife.

#### **Big Game**

Reasonably foreseeable future disturbances within the big game CESAs are as follows:

- Bighorn sheep: mineral development and exploration (3,640 acres quantified) and utilities and landfill expansion (273 acres).
- Elk: mineral development and exploration (3,590 acres quantified) and utilities and landfill expansion (273 acres).
- Mule deer: mineral development and exploration (11,887 acres) and utilities and landfill expansion (273 acres).



- Pronghorn antelope: mineral development and exploration (4,520 acres) and utilities and landfill expansion (273 acres).

These activities may lead to displacement of big game and fragmentation of big game habitats. Fragmentation effects within the CESA have not been quantified by the land management agencies. Big game-vehicle collisions are likely to become more frequent in the CESA as the overall traffic volume increases as a result of these RFFAs.

### **Migratory Birds and Golden Eagles**

Reasonably foreseeable future disturbances within this CESA include mineral exploration (3,586 acres quantified) and utilities and infrastructure (301 acres quantified). Effects from these activities may result in habitat fragmentation, habitat alteration and disturbance, and disturbance of active nests. Collisions with power lines and vehicles associated with RFFDs would be expected, as would trampling of active nests associated with future livestock grazing. Compliance with the MBTA and BGEPA would be required for RFFDs having the potential to impact migratory birds and golden eagles, and would limit the impacts of these activities.

Climate change is also anticipated to impact migratory birds within the CESA in the reasonably foreseeable future, with sagebrush-obligate species such as Brewer's Sparrow, Sage Sparrow, and Sage Thrasher anticipated to decline statewide due to shifts in sagebrush communities to drier salt desert scrub communities, increased fire frequency, and increased prevalence of annual grasses (Provencher and Anderson 2011; Wildlife Action Plan Team 2012; GBBO 2012). The potential impacts from climate change within the CESA cannot be quantified.

### **Greater Sage-Grouse**

Reasonably foreseeable future disturbances within this CESA include mineral exploration (7,385 acres quantified) and utilities and infrastructure (325 acres quantified). Effects from these activities may cause increased ambient noise levels, which may disturb greater sage-grouse breeding, nesting, and brood rearing behavior. Direct mortalities, displacement and habitat fragmentation may also occur. Fragmentation effects within the CESA have not been quantified by the land management agencies as quantification is very difficult. Climate change is anticipated to result in a shift in sagebrush communities towards mixed salt desert scrub and greater cover of annual grasses, which will result in less available habitat for greater sage-grouse in the CESA (Provencher and Anderson 2011, Wildlife Action Plan Team 2012, GBBO 2012). The exact extent of the potential impacts from climate change is uncertain and cannot be quantified.

## ***5.11.5 Cumulative Disturbances***

### **General Wildlife**

Of the 998,955 acres covered by the general wildlife CESA, 32,564 acres of disturbance are associated with past actions, present actions, and RFFAs, which is a disturbance of approximately 3 percent of the CESA. Recognizing that 267 acres of exploration disturbance at Gold Rock are already included as a present action (Table 5.2-1), the Proposed Action would increase the disturbance within the CESA by 3,679 acres to approximately 36,243 acres, or approximately 4 percent of the CESA. However, with 395 acres of existing disturbance within the Plan area and approximately 3,456 acres to be reclaimed, the net long-term disturbance within the CESA due to the Proposed Action would be approximately 95 to 96 acres.



Wildlife displacement and habitat fragmentation from mineral development and exploration activities decreases survival and reproduction rates of affected individuals to some degree and increases competition. Implementation of the Proposed Action would potentially result in displacement of less mobile small mammals, predatory mammals, and reptiles and dispersal of wildlife and some forms of recreation (hiking, hunting, ATV use, etc.) from the Plan area and surrounding habitat into adjacent undisturbed areas. Displacement of some forms of recreation from the Proposed Action and alternatives has the potential to result in a cumulative effect to wildlife for the duration of the Proposed Action and alternatives.

### **Special Status Small Mammals and Fish**

Of the 483,967 acres covered by the CESA for special status small mammals and fish, 10,615 acres of disturbance are associated with past actions, present actions, and RFFAs, which is a disturbance of approximately 2 percent of the CESA. Recognizing that 267 acres of exploration disturbance at Gold Rock are already included as a present action (Table 5.2-1), the Proposed Action would increase the disturbance within the CESA by 3,679 acres to approximately 14,294 acres, or approximately 3 percent of the CESA. This is an approximately 26 percent disturbance increase within the CESA. Direct disturbance to special status small mammals and fish are similar to those for general wildlife.

### **Big Game**

Of the 998,955 acres covered by the big game CESA, 32,564 acres of disturbance are associated with past, present, and RFFAs, which is a disturbance of approximately 3 percent of the CESA. A breakdown of disturbance acres to each individual big game CESA from past, present and RFFAs is provided below. In addition, the amount of increased disturbance from the Proposed Action is described below.

- Bighorn sheep: of the 1,744,450 acres covered by the bighorn sheep CESA, 39,761 acres of disturbance are associated with past, present, and RFAAs, which is a disturbance of approximately 2 percent of the CESA. The Proposed Action is not anticipated to disturb any acres of bighorn sheep range in the CESA.
- Elk: of the 2,205,883 acres covered by the elk CESA, 57,601 acres of disturbance are associated with past, present, and RFAAs, which is a disturbance of approximately 3 percent of the CESA. The Proposed Action is not anticipated to disturb any acres of elk range in the CESA.
- Mule deer: of the 4,262,792 acres covered by the mule deer CESA, 157,520 acres of disturbance are associated with past, present, and RFAAs, which is a disturbance of approximately 3.7 percent of the CESA. Recognizing that 267 acres of exploration disturbance at Gold Rock are already included as a present action (Table 5.2-1), the Proposed Action would increase disturbance within the CESA by 3,679 acres to approximately 161,199 acres, or approximately 3.8 percent of the CESA.
- Pronghorn antelope: of the 2,816,033 acres covered by the pronghorn antelope CESA, 54,600 acres of disturbance are associated with past, present, and RFAAs, which is a disturbance of approximately 1.9 percent of the CESA. Recognizing that 267 acres of exploration disturbance at Gold Rock are already included as a present action (Table 5.2-1), the Proposed Action would increase disturbance within the CESA by 3,679 acres to approximately 58,084 acres, or approximately 2.1 percent of the CESA.

Implementation of the Proposed Action would potentially result in displacement of big game species, particularly mule deer and pronghorn antelope, from the project into adjacent,



undisturbed areas. Displacement from other past, present, and RFFAs would also influence big game displacement from the CESA. Cumulative effects of displacement to big game could result in decreases in survival rates of affected individuals primarily through increased noise, habitat fragmentation and direct mortalities associated with collisions with vehicles. It is expected that any future management activities in the big game CESAs will meet standards and guidelines specifically developed to protect habitat for big game on public lands. These future management activities along with mitigation measures developed for the Proposed Action should help to limit cumulative effects to big game species due to habitat displacement, fragmentation, and vehicular collisions.

### **Migratory Birds and Golden Eagles**

Impacts from cumulative disturbance on migratory birds and eagles would be similar to those described above for general wildlife and special status small mammals and fish. Of the 484,411 acres covered by the migratory bird and eagle CESA, 11,270 acres of disturbance are associated with past, present, and RFFAs, which is a disturbance of approximately 2.3 percent of the CESA. Recognizing that 267 acres of exploration disturbance at Gold Rock are already included as a present action (Table 5.2-1), the Proposed Action would increase the disturbance within the CESA by 3,679 acres to approximately 14,949 acres, or approximately 3.1 percent of the CESA. However, with 395 acres of existing disturbance within the Plan area and approximately 3,456 acres to be reclaimed, the net long-term disturbance within the CESA due to the Proposed Action would be approximately 95 to 96 acres.

The effects of past, present, and reasonably foreseeable future disturbances would be minimized with the implementation of the MBTA and BGEPA and associated pre-construction surveys and nest avoidance during the migratory bird breeding season. Impacts of cumulative surface disturbance would potentially result in fragmentation and loss of habitat within the area; however, these disturbances would affect a relatively small percentage of the CESA.

### **Greater Sage-Grouse**

Of the 1,727,788 acres covered by the greater sage-grouse CESA, 56,243 acres of disturbance are associated with past, present, and RFFAs, which is a disturbance of approximately 3.3 percent of the CESA. Recognizing that 267 acres of exploration disturbance at Gold Rock are already included as a present action (Table 5.2-1), the Proposed Action would increase the disturbance within the CESA by 3,679 acres to approximately 59,922 acres, or about 3.5 percent of the CESA. However, with 395 acres of existing disturbance within the Plan area and approximately 3,456 acres to be reclaimed, the net long-term disturbance within the CESA due to the Proposed Action would be approximately 95 to 96 acres.

Specific to greater sage-grouse, impacts from mineral development and exploration activities could include decreases in survival rates (i.e., decreased breeding, nesting, and brood survival) of affected individuals primarily through increased ambient noise levels, habitat fragmentation, and direct mortalities associated with collisions with vehicles, fences, and transmission lines.

The effects of past management activities in the CESA on greater sage-grouse is not known. Any future management activities must meet standards and guidelines specifically developed to protect habitat for greater sage-grouse on public lands, thus future management activities should result in relatively few cumulative effects to this species via habitat losses and displacement. In addition, mitigation is required or requested for new projects on public land to offset greater sage-grouse habitat losses, which reduces the overall impact to greater sage-grouse in the CESA.



### **5.11.6 Cumulative Effects**

#### **General Wildlife**

Impacts from past, present, and RFFA in conjunction with the Proposed Action to general wildlife would result in cumulative displacement and habitat fragmentation. Cumulative effects of the Proposed Action combined with past, present and RFFAs would total approximately 3 percent of the CESA. Additional disturbance would result from unquantifiable impacts, such as climate change. The disturbance resulting from the Proposed Action would mostly be reclaimed after mining operations are completed, which would help to reduce the impacts to general wildlife.

The cumulative effects to general wildlife under the other action alternatives would be the same as those under the Proposed Action, except that the acreage of direct disturbance would vary slightly (but still constitute a relatively small percentage of the CESA).

#### **Special Status Small Mammals and Fish**

Impacts from past, present, and RFFA in conjunction with the Proposed Action to special status small mammals and fish would be similar to those for general wildlife. The Proposed Action combined with past, present and RFFAs would total approximately 3 percent of the CESA.

#### **Big Game**

Impacts from past, present, and RFFA in conjunction with the Proposed Action to big game, particularly mule deer and pronghorn antelope, would result in cumulative displacement, mortalities from vehicle collisions, and habitat fragmentation. Cumulative effects to big game are expected to be long-term. Cumulative effects to big game because of the Proposed Action combined with past, present, and RFFAs would only be approximately 3.8 percent of the mule deer CESA and 2 percent of the pronghorn antelope CESA (note, the Proposed Action is not anticipated to directly impact bighorn sheep or elk ranges within their respective CESAs). In addition, the disturbance to big game CESAs resulting from the Proposed Action would mostly be reclaimed after mining operations are completed which would help to reduce impacts.

The cumulative effects to big game under the Modified County Road Re-Route, Northern Power Line Route, Southern Power Line Route, NW Main Access Route, and Western Tailings Storage Facility alternatives would be similar as those described above for the Proposed Action with the following exceptions:

- Northern Power Line Route: this alternative would disturb 16 fewer acres of pronghorn antelope range and 21 fewer acres of mule deer range in the CESAs.
- Southern Power Line Route: this alternative would disturb 17 fewer acres of pronghorn antelope range and 22 fewer acres of mule deer range in the CESAs.
- NW Main Access Route Alternative, Northern Power Line Route: this alternative would disturb 57 more acres of pronghorn antelope range and 32 more acres of mule deer range in the CESAs.
- NW Main Access Route Alternative, Southern Power Line Route: this alternative would disturb 66 more acres of pronghorn antelope range and 41 more acres of mule deer range in the CESAs.
- Modified County Road Re-Route: this alternative would disturb one less acre of pronghorn antelope range and 1 less acre of mule deer range in the CESAs.



- Western Tailings Storage Facility: this alternative would disturb 139 fewer acres of pronghorn antelope range and 353 fewer acres of mule deer range in the CESAs.

### **Migratory Birds and Golden Eagles**

Impacts from past, present, and RFFA in conjunction with the Proposed Action to migratory birds and eagles would result in similar impacts as described for general wildlife and special status small mammals and fish, including cumulative habitat loss. Cumulative effects resulting from the Proposed Action combined with past, present and RFFAs would total approximately 3 percent of the CESA. Additional disturbance would result from unquantifiable impacts, such as climate change. The disturbance resulting from the Proposed Action would mostly be reclaimed after mining operations are completed which would help to reduce the impacts to migratory bird and eagle habitat.

The cumulative effects to migratory birds and eagles under the other action alternatives would be the same as those under the Proposed Action, except that the acreage of direct disturbance would vary slightly (but still constitute a relatively small percentage of the CESA).

### **Greater Sage-Grouse**

Impacts from past, present, and RFFA in conjunction with the Proposed Action to greater sage-grouse would result in cumulative displacement and habitat fragmentation. Potential impacts associated with increased ambient noise levels throughout the CESA would include decreased greater sage-grouse breeding, nesting, and brood rearing activity from increased ambient noise levels associated with past, present, and RFFAs in combination with the Proposed Action.

Direct disturbance associated with the Proposed Action combined with past, present and RFFAs would total approximately 3.5 percent of the CESA. Additional, unquantifiable impacts to greater sage-grouse would result from factors such as climate change and unquantifiable indirect impacts from past, present, and RFFAs. Disturbance resulting from the Proposed Action would mostly be reclaimed after mining operations are completed, which would help to reduce the impact to greater sage-grouse habitat. In addition, mitigation measures would be implemented as described in Section 4.9.11 to offset the impacts of the project on greater sage-grouse.

The cumulative effects to greater sage-grouse under the Northern and Southern Power Line Route alternatives would be less than those under the Proposed Action, as they would affect less PPH and PGH have less cumulative impact to greater sage-grouse habitat compared with the Proposed Action.

The cumulative effects to greater sage-grouse under the other action alternatives would be similar to those under the Proposed Action, except that the acreage of direct disturbance would vary slightly (but still constitute a relatively small percentage of the CESA). Relative to the Proposed Action, there would be 12 more acres of direct disturbance to PPH and 21 more acres of direct disturbance to PGH under the Northwest Main Access Route Alternative, Northern Power Line Route; 12 more acres of direct disturbance to PPH and 24 more acres of direct disturbance to PGH under the Northwest Main Access Route Alternative, Southern Power Line Route; 1 less acre of direct disturbance to PGH under the Modified County Road Re-route Alternative, and 120 fewer acres of direct disturbance to PGH under the Western Tailings Storage Facility Alternative.



## 5.12 RANGE RESOURCES

### 5.12.1 *CESA Boundary*

The CESA boundary for range resources includes the full extent of the Duckwater Allotment, Monte Cristo Allotment, South Pancake Allotment and Six-Mile Allotment, as well as the Eighteen Mile House grazing use area and South Newark pasture in the Newark allotment. The total area of this CESA is 969,208 acres of BLM and privately controlled lands (Figure 5.1-5). This CESA boundary was chosen because it encompasses the allotments and the permitted range uses that are associated with the Proposed Action.

### 5.12.2 *Introduction*

Cumulative effects to range resources in the CESA primarily occur from mining and exploration Plans of Operations, exploration notices, sand and gravel extraction operations, utility lines, oil and gas development, roads, and wild land fires. These activities often modify landscapes and remove vegetation resources that would otherwise be available for range resources. These surface disturbance activities also increase the likelihood of noxious and non-native, invasive species establishment. Areas of surface disturbance in the sections below are presented in Table 5.2-1.

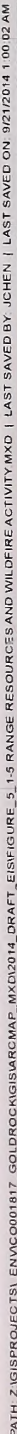
### 5.12.3 *Past and Present Disturbances*

Past mineral and oil and gas development and exploration actions within the CESA include the Easy Junior Mine, Green Springs Mine, and Pan Mine Exploration for a combined unreclaimed disturbance of approximately 409 acres. Although the acreage associated with these projects has not been actively reclaimed, natural reclamation of vegetation species has likely occurred over time resulting in various levels of revegetation. Present mineral development and exploration actions within the CESA include several active mines and mineral exploration projects, including Gold Rock Exploration Project and Cathedral Canyon Exploration Project, which represent an additional 272 acres of disturbance. An additional 94 acres of disturbance within the CESA are due to past and present sand and gravel mining operations.

Past and present oil and gas development in the area has also impacted a total of 119 acres within the CESA. There are approximately 894 acres of past and present disturbance associated with mineral and oil and gas development and exploration activities the CESA. Impacts of mineral development and exploration can be long-term; however reclamation of vegetation species, whether natural or man-made, will eventually occur. Noxious and non-native, invasive weed species are more likely to establish in disturbed areas; therefore, successful reclamation assists to limit the spread of these species.

Utility related disturbance within the CESA includes the El Dorado to Farm Area Power Line runs along the northwest corner of the CESA for a total of approximately 15 acres of disturbance. Additionally the Silver State fiber optic line is located along Highway 50 at the northern boundary of the CESA for a total of 80 acres of additional past disturbance. Other transmission lines on USFS land have disturbed 64 acres. A total of 159 acres within the CESA have been previously disturbed for utility projects. While these types of disturbances do not typically result in a loss of land access, vegetation clearing from construction of utilities and access roads increases the likelihood of noxious and non-native, invasive species establishment. After construction of these projects, access roads remain maintained which creates a minor, long-term impact to vegetation in the CESA. These roads may be also utilized by those who would not have otherwise traveled to these locations (i.e., recreational use), which may lead to the spread and establishment of noxious and non-native, invasive species.







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Construction of the Currant Ranch and Duckwater airports have disturbed a total of 28 acres within the CESA.

There are approximately 9,482 acres of disturbance associated with roads within the range resources CESA. This acreage includes approximately 316 acres of United States highways, 347 acres of state routes, 518 acres of local and county roads, 8,288 acres of BLM roads, 13 acres of USFS roads, and less than 1 acre of other roads (e.g., private roads and roads without an assigned name or ownership).

No areas within the CESA are recorded as having been burned previously.

#### **5.12.4 Reasonably Foreseeable Future Disturbances**

Foreseeable future disturbances within the CESA include approximately 15 acres of disturbance from the Centennial-Seligman Access Road Right-Of-Way; 3,301 acres of proposed disturbance from the Pan Mine Project; less than one acre associated with the proposed Strawberry 69kV Transmission line; and approximately 152 acres from the Pan Mine Southwest Power Line Route. Disturbance as a result of these proposed activities will remove approximately 3,469 acres from utilization by range resource use.

The amount of wild land fire that could occur within the reasonably foreseeable future within the CESA is unknown and not quantifiable; therefore, it was not considered for this analysis.

#### **5.12.5 Cumulative Disturbances**

Grazing would be postponed within the Proposed Action footprint until full reclamation of the disturbed areas occurs and land managers agree that the reclamation is suitable for range resource use.

The CESA for range resources is 969,208 acres of BLM and privately controlled lands; the calculated carrying capacity of this area is approximately 24,230 AUMs based on a ratio of one AUM/40 acres. Of the total 969,208 acres covered by the CESA, approximately 14,032 acres of surface disturbance, with a carrying capacity of 351 AUMs, are associated with known and quantifiable past, present, and RFFAs, which is a disturbance of approximately 1 percent of the CESA. Recognizing that 267 acres of exploration disturbance at Gold Rock are already included as a present action (Table 5.2-1), the Proposed Action would increase the surface disturbance within the CESA by 3,679 acres and an additional 92 AUMs, to approximately 18,617 acres, or approximately 2 percent of the CESA. However, with 395 acres of existing disturbance within the Plan area and approximately 3,456 acres to be reclaimed, the net long-term disturbance within the CESA due to the Proposed Action would be approximately 95 to 96 acres.

The amount of surface disturbance may or may not directly relate to impacted AUMs. In addition to direct impacts to vegetation and loss of range resource, impacts to range resources can include exclusion of grazing area from public access. Based on the analysis conducted in Section 4.10 approximately 9,289 acres of rangelands, including the 267 acres of exploration identified as a present action in this cumulative effects analysis, would be impacted by the Proposed Action. Based on this area, a total of 232 AUM would be lost. However, this area of impact includes the 8,757-acre fenced mine area. In the short-term, the fence would exclude livestock grazing. The fencing would be removed during the closure process, and access to range resources would be re-established.



Information was not available to directly compare range specific impacts from all alternatives in combination with past actions, present actions, and RFFAs across the CESA.

Reclamation and continued monitoring until successful establishment of vegetation species would result in improved range resources. Livestock grazing on the five allotments within the CESA would continue to occur into the reasonably foreseeable future.

### **5.12.6 Cumulative Effects**

Range resources and vegetation community types are common and widespread throughout the CESA. Vegetation resources would be restored after successful reclamation.

Cumulative effects to range resources under the Northern Power Line Alternative and Southern Power Line Alternative would both be approximately 33 acres less than those due to the Proposed Action. For the Northwest Main Access Route Alternative cumulative impacts to range resources would be approximately 41 acres more than the Proposed Action. Cumulative effects to range from the Modified County Road Re-Route Alternative would be approximately the same as the Proposed Action. The additional disturbance of up to 41 acres (or one AUM) of rangelands due to construction and maintenance of the power lines and associated roads under these alternatives would not significantly increase the impact to range resources when compared to the Proposed Action.

The cumulative effects to range resources under the Western Tailings Facility Alternative would be the same as those under the Proposed Action, with the exception that it would disturb 153 fewer acres. This is a reduction of about 4 percent when compared to the expected impacts to range from the Proposed Action and would not significantly decrease the impacts to rangelands.

Cumulative effects to rangeland resources under the No Action Alternative would include 267 acres of previously authorized disturbance within the project area.

## **5.13 FOREST PRODUCTS AND FUELS**

### **5.13.1 CESA Boundary**

The CESA boundary for forest products and fuels includes is shown on Figure 5.1-2 and is the same as the water resources CESA. The total area of this CESA is 483,967 acres. This CESA boundary was chosen because cumulative effects to forest products and fuels would be limited to this area.

### **5.13.2 Introduction**

Disturbance within the forest products and fuel CESA primarily includes mining and exploration, exploration notices, sand and gravel extraction operations, utility lines, oil and gas development, roads, and wild land fires. Disturbance associated with these actions involves vegetation clearing, which reduces forest product availability and access and fuel availability. Forest types within the CESA are common and widespread throughout Nevada. Areas of surface disturbance in the sections below are presented in Table 5.2-1.

### **5.13.3 Past and Present Disturbances**

Past mineral development and exploration actions within the CESA includes the Easy Junior Mine, Mount Hamilton Mine, Green Springs Mine, and Pan Project exploration for a combined



surface disturbance of approximately 796 acres. Although these projects have not actively been reclaimed, natural reclamation of vegetation species may have occurred over time resulting in various levels of revegetation. Present mineral development and exploration actions within the CESA include several active mines and mineral exploration projects, including Centennial Exploration Project, Gold Rock Exploration Project, Wheeler Ridge Exploration Project, and Cathedral Canyon Exploration Project, which represent an additional 349 acres of disturbance. Finally, an additional 139 acres of disturbance within the CESA are due to past and present sand and gravel mining operations.

In summary, approximately 1,145 acres of past and present surface disturbance has occurred during mineral development and exploration activities the CESA. In addition to mineral development approximately 6 acres within the CESA have been disturbed for oil and gas development. Impacts of mineral and oil and gas development and exploration can be long-term. Although reclamation of vegetation species will eventually occur, forest areas disturbed by these actions may be permanently altered.

Utility related disturbance within the CESA includes the El Dorado to Farm Area Power Line which runs along the northwest corner of the CESA for a total of approximately 53 acres of disturbance. Additionally the Silver State fiber optic line is located along Highway 50 at the northern boundary of the CESA for a total of 18 acres of additional past disturbance. A total of 71 acres within the CESA have been previously disturbed for utility projects. While these types of disturbances do not typically result in a loss of land access, vegetation clearing from construction of utilities and access roads increases the likelihood of noxious and non-native, invasive species establishment. After construction of these projects, access roads remain maintained. These roads may be also used by those who would not have otherwise traveled to these locations (i.e., recreational use), which may lead to the spread and establishment of noxious and non-native, invasive species and provide access to previously inaccessible forest products.

There are approximately 4,814 acres of disturbance associated with roads within the CESA (Table 5.2-1). Establishment of roads effects forest products and fuels for the long-term. Noxious and non-native, invasive species are typically the first species to establish, especially along road corridors and where vehicles travel off road. Off-road areas disturbed by vehicles are often slower to reestablish because the soils have been compacted. Vehicles that travel off road spread seeds of noxious and non-native, invasive species. Roads create access into areas that might not otherwise be accessible. This increases the risk of off-highway vehicle use which has a greater likelihood for limiting the possibilities for forest reestablishment.

Approximately 577 acres of the CESA has previously burned as a result of wild land fire. Burned areas result in patched landscapes that create natural fire breaks and diversify habitat for wildlife; however, burned landscapes often become dominated by noxious and non-native, invasive species. Burned areas represent a natural means of fuel reduction.

#### **5.13.4 Reasonably Foreseeable Future Disturbances**

Foreseeable future disturbances within the CESA include approximately 75 acres of disturbance associated with Green Springs Mineral Exploration Project; approximately 195 acres of exploration associated with the Centennial-Seligman Mining and Exploration Project and approximately 15 acres related to the access road right-of-way; approximately 3,301 acres associated with the Pan Project; 4 acres associated with the Griffon Mine Exploration Project, and 1 acre associated with the Strawberry 69kV transmission line. Disturbance as a result of



these proposed activities would likely result in removal of 3,590 acres of vegetation.

The amount of wild land fire that could occur within the reasonably foreseeable future within the CESA is unknown and not quantifiable; therefore, it was not considered for this analysis.

### **5.13.5 Cumulative Disturbances**

The CESA for forest products and fuels is approximately 483,967 acres of BLM, USFS, and privately-controlled lands. Of the 483,967 acres covered by the CESA, approximately 10,615 acres of disturbance are associated with past, present, and RFFAs, which is a surface disturbance of approximately two percent of the CESA. Recognizing that 267 acres of exploration disturbance at Gold Rock are already included as a present action (Table 5.2-1), the Proposed Action would increase the surface disturbance within the CESA by 3,679 acres to approximately 14,294 acres, or approximately 3 percent of the CESA. However, with 395 acres of existing disturbance within the Plan area and approximately 3,456 acres to be reclaimed, the net long-term disturbance within the CESA due to the Proposed Action would be approximately 95 to 96 acres.

The amount of surface disturbance may or may not directly relate to impacted forest product collection. In addition to direct impacts to vegetation and loss of forest product resource, impacts to forest products can include exclusion of forest product areas from public access. Within the fenced mine area, approximately 2,628 acres of land support pinyon-juniper woodland communities, which can provide forest products. In the short-term, the fence would exclude the forest products within the fenced area from public access. The fencing would be removed during the closure process, and access to forest products would be re-established.

Information was not available to directly compare forest product or fuels specific impacts across the CESA. However, the area of vegetation communities can be compared. Vegetation communities in the CESA include approximately 136,748 acres of Great Basin pinyon-juniper woodland communities. Under the Proposed Action or alternatives (including the 267 acres of Gold Rock exploration identified as a present action in this cumulative analysis), up to 2,650 acres of Great Basin pinyon-juniper woodland communities could be impacted through direct impacts to vegetation outside the fenced mine area, or through exclusion by mine area fencing. These potential impacts could affect approximately two percent of the Great Basin pinyon-juniper woodland communities in the CESA.

With regard to other past actions, present actions, and RFFAs, the existing 4.2-acre permitted commercial fuelwood harvesting area represents less than 0.01 percent of the commercial fuelwood permit areas currently granted within the CESA. The existing 1,220-acre permitted commercial pine nut collection area represents approximately nine percent of the current permitted commercial pine nut collection areas within the CESA.

### **5.13.6 Cumulative Effects**

Considering past, present, and RFFA disturbances in the forest products and fuels CESA combined with the Proposed Action, cumulative effects to forest product and fuel resources could include surface disturbance, loss of vegetation and therefore loss of forest resource, and displacement of some types of activities, such as the collection of forest products. For those projects with a federal nexus, reclamation and continued monitoring until successful establishment of vegetation species within disturbed areas would result in improved vegetation



composition, limit the spread and establishment of noxious and non-native invasive species, and reduce erosion potential within the CESA.

Cumulative effects to forest product resources under the Northern Power Line Alternative and Southern Power Line Alternative would both be approximately 16 acres and 20 acres less than those due to the Proposed Action, respectively. For the Northwest Main Access Route Alternative cumulative impacts to forest product resources would be less than one acre more than the Proposed Action for the North option and 7 acres less for the South option. Cumulative effects to vegetation from the Modified County Road Re-Route Alternative would be approximately the same as the Proposed Action. The additional disturbance of up to 7 acres of forest products due to construction and maintenance of the power lines and associated roads under these alternatives would not significantly increase the impact to forest products resources when compared to the Proposed Action.

The cumulative effects to forest product resources under the Western Tailings Facility Alternative would be the same as those under the Proposed Action, with the exception that it would disturb 147 fewer acres of potential forest products. This is a reduction of about 19 percent when compared to the expected impacts to forest products from the Proposed Action and would not significantly decrease the impacts to forest products.

Cumulative effects to fuel resources under the Northern Power Line Alternative and Southern Power Line Alternative would both be approximately 47 tons and 57 less than those due to the Proposed Action, respectively. For the Northwest Main Access Route Alternative cumulative impacts to fuel resources would be 3.5 tons more than the Proposed Action for the North option and 18 tons less for the South option. Cumulative effects to vegetation from the Modified County Road Re-Route Alternative would be approximately the same as the Proposed Action. The additional disturbance of up to 3.5 tons of fuel resources due to construction and maintenance of the power lines and associated roads under these alternatives would not significantly increase the impact to fuel resources when compared to the Proposed Action.

The cumulative effects to fuel resources under the Western Tailings Facility Alternative would be the same as those under the Proposed Action, with the exception that it would disturb 233 fewer tons of potential fuels. This is a reduction of about 20 percent when compared to the expected impacts to fuels from the Proposed Action and would not significantly decrease the impacts to fuels.

Cumulative effects to forest product and fuel resources under the No Action Alternative would include 267 acres of previously authorized disturbance within the project area.

## **5.14 WILD HORSES**

### **5.14.1 CESA Boundary**

The CESA for wild horses is the Pancake Herd Management Area (HMA), the Sand Springs West HMA, and the Monte Cristo Wild Horse Territory (WHT) (Figure 5.1-2). The total area for this CESA is 1,097,208 acres of land.

### **5.14.2 Introduction**

Cumulative effects to wild horses in the CESA primarily occur from mining and exploration activities, utility lines, roads, and wildfires. These activities often modify landscapes and remove



vegetation resources that would otherwise be available for wild horse use. These disturbance activities also increase the likelihood of noxious and non-native, invasive species establishment which reduces the amount of available forage vegetation. Acres of disturbance in the sections below are presented in Table 5.2-1.

### **5.14.3 Past and Present Disturbances**

Past and present disturbances within the CESA total approximately 11,138 acres. Past and present mineral development and exploration projects within the CESA include the Easy Junior Mine, the Mount Hamilton Mine, Gold Rock Exploration, Green Springs Mine, Wheeler Ridge Exploration Project, Green Springs Mineral Exploration Project, Pan Mine Exploration Project, and the Cathedral Canyon Exploration Project. Extraction and exploration of mineral resources directly displaces prime farmlands. Vegetation clearing activities increase the likelihood of erosion. Increased human activity has the ability to compact soils.

There are approximately 84 acres of disturbance associated with sand and gravel operations and approximately 55 acres of disturbance associated with oil and gas development projects within the CESA. In addition, there are approximately 9,534 acres of disturbance associated with roads within the CESA (Table 5.2-1). Disturbances associated with these actions increase the likelihood of spreading noxious and non-native invasive species. These species reduce the amount of usable range and available forage.

Extraction and exploration of mineral resources directly removes vegetation from lands that could be used as cover and forage for wild horse use. Vegetation clearing activities increase the likelihood of spreading noxious and non-native invasive species. These species can further reduce the amount of available forage. Noise and increased human activity has the ability to displace wild horse herds into adjacent areas.

### **5.14.4 Reasonably Foreseeable Future Disturbances**

Foreseeable future disturbances within the CESA include the Pan Mine Project, the Centennial-Seligman Mining and Exploration Project, the Green Springs Mineral Exploration Project, the Nekekim Mining Project, and the Strawberry 69 kV Transmission Line, for a total of approximately 3,655 acres. Disturbance as a result of these proposed activities would likely remove 3,655 acres of forage for wild horses.

### **5.14.5 Cumulative Disturbances**

The CESA for wild horses is nearly entirely comprised of BLM and USFS lands (1,096,997 of the 1,097,208 acres in the CESA are BLM and USFS lands). Of the total acreage within the CESA, approximately 14,938 acres of disturbance are associated with past, present, or RFFAs, which is a disturbance of approximately 1 percent of the CESA.

Recognizing that 267 acres of exploration disturbance at Gold Rock are already included as a present action (Table 5.2-1), the Proposed Action would increase the disturbance of horse habitat within the CESA by 3,679 acres to approximately 18,617 acres, or about 2 percent of the CESA. However, with 395 acres of existing disturbance within the Plan area and approximately 3,456 acres to be reclaimed, the net long-term disturbance within the CESA due to the Proposed Action would be approximately 95 to 96 acres.

In addition to direct impacts to vegetation and loss of wild horse resources, impacts to wild



horse resources can include exclusion of grazing area from access. Based on the analysis conducted in Section 4.12 approximately 9,260 acres of lands within the CESA, including the 267 acres of exploration disturbance identified as a present action in this cumulative effects analysis, would be impacted by the Proposed Action. However, this area of impact includes the 8,757-acre fenced mine area. In the short-term, the fence would exclude horses from using this area. The fencing would be removed during the closure process, and access for wild horses would be re-established.

### **5.14.6 Cumulative Effects**

Cumulative impacts to wild horse resources from past actions, present actions, and RFFAs, and all of the action alternatives could include modification of landscapes, removal or reduction of forage resources, or the spread of noxious or non-native invasive weeds that could diminish forage resources. Reclamation and continued monitoring until successful establishment of vegetation species within the disturbed areas associated with the past actions, present actions, and RFFAs would result in improved range resources.

Under the Proposed Action, wild horses could be affected directly by displacement of horse habitat by mine infrastructure, mining disturbances that result in the removal of cover and forage vegetation, automobile or truck collisions, and disturbances associated with increased human activity and noise. Cumulative effects to wild horses under the Proposed Action would include the loss of forage and displacement of wild horse habitat within the 8,757-acre fenced portion of the Plan area for the life of the mine.

For those areas not reclaimed, permanent impacts would be long term. Less than 0.3 percent of the wild horse habitat within the CESA would be displaced. The displaced forage is comprised of vegetation community types are common and widespread throughout the area. Although the Proposed Action would displace a small percentage of the available wild horse habitat, wild horses are currently stressed as a result of insufficient forage and water within the existing HMAs and WHT. It is anticipated that managing the numbers of wild horse to maintain horse populations within the AML would minimize potential conflicts between mine activities and wild horses within the analysis area. If wild horse populations are maintained within the AML, wild horses would likely have sufficient available forage throughout the remainder of the combined total of approximately 1.1 million acres within the Pancake and Sand Springs HMAs and the Monte Cristo WHT.

Wild horse displacement would be temporary and vegetation resources would be restored after successful reclamation. It is anticipated that managing wild horses within the AML would minimize the potential for direct conflicts between mine activities and wild horses within the Plan area.

An increase in traffic associated with the Proposed Action and other reasonably foreseeable future actions could increase the likelihood of vehicle collisions on the access roads, thus possibly increasing the probability of horse injuries or mortalities. Implementation of environmental protection measures or BMPs would minimize long-term effects to wild horses.

Cumulative effects to wild horses under the Northern Power Line Alternative would be the same as those under the Proposed Action, with the exception that it would disturb approximately 33 fewer acres of wild horse habitat.

Cumulative effects to wild horses under the Southern Power Line Alternative would be the same



as those under the Proposed Action, with the exception that it would disturb approximately 31 fewer acres of wild horse habitat.

The cumulative effects to wild horses under the Northwest Main Access Route Alternative would be similar to those under the Proposed Action, with the exception that it would disturb approximately 47 (Northern Power Line Route) or 53 (Southern Power Line Route) additional acres of wild horse habitat.

Cumulative effects to wild horses under the Modified County Road Re-Route Alternative would be the same as those under the Proposed Action.

Cumulative effects to wild horse under the Western Tailings Storage Facility would be similar to those under the Proposed Action, with the exception that the fenced area would be smaller (7,049 acres); therefore, approximately 1,708 fewer acres of wild horse habitat would be disturbed.

Cumulative effects to wild horses under the No Action Alternative would include 267 acres of previously authorized disturbance within the Plan area.

## **5.15 CULTURAL RESOURCES**

### **5.15.1 CESA Boundary**

The CESA for cultural resources includes the western edge of White Pine County from just south of the Elko County line, a small part of Eureka County in the Diamond Range, and a small part of Nye County to the south consisting of the Duckwater Valley and adjacent portions of the Pancake Range and Railroad Valley (Figure 5.1-2). This area consists primarily of the Newark Valley, upper Railroad Valley, and the adjacent mountains. This area was chosen because it encompasses an interconnected area of historic and ongoing mining. Mining areas in the CESA include the Bald Mountain Area, portions of the Eureka Mining District, the Gibellini Mining District, the Pancake Mining District, and the historic White Pine Mining District. Table 5.2-1 lists the acreages of surface disturbance by project within the cultural CESA that may have affected important cultural resources.

### **5.15.2 Introduction**

Historic properties that may cumulatively be affected by past, present, and reasonably foreseeable future actions in this study area include prehistoric and historic archaeological sites, historic structures, and TCPs. In addition, development and modification of the landscape can indirectly alter important aspects of the historic setting of historic transportation corridors and other extensive historic sites. Incremental degradation and loss of historic properties is an irretrievable loss of tangible cultural heritage and the information and the interpretive potential that they embody. The primary current land uses in the CESA are mining and ranching.

### **5.15.3 Past and Present Actions**

Past and present actions that have contributed to the degradation and loss of historic properties include mineral development, oil and gas development, construction and maintenance of roads, construction and maintenance of utilities, and private development. Uncontrolled events such as wild land fires also result in large areas of surface disturbance and damage. Undocumented indirect effects include vandalism, artifact collection and inadvertent damage to sites. Many private and ongoing activities are not regulated, and there will be no record of adverse effects to



historic properties. In addition, the effects of uncontrolled events such as wildfires and flash floods to the loss of historic properties are largely undocumented. Past and present land uses in the CESA have contributed to the degradation, loss, and burial of historic properties and associated artifacts as well as alteration of the historic setting associated with these historic properties.

Authorized actions on state and federal land require that cultural resource inventories be conducted to identify the presence of historic properties that could be affected by these actions. There is no such requirement for actions on private land unless they involve state or federal approval, permits, or funding. For federal actions, Section 106 of the NHPA requires that effects to historic properties be taken into consideration and that adverse effects be avoided or mitigated to the extent possible.

Known past and present surface disturbances in the CESA are listed in Table 5.2-1 and have been dominated by road development, wild land fires, and mineral development. In the past, mineral development was less extensive in the CESA, but it has become the predominant class of present actions in terms of acreage of surface disturbance. Known past actions and events have resulted in at least 41,107 acres of surface disturbance. Present actions have disturbed 13,778 acres. The Project would also contribute to cumulative adverse effects and loss of historic properties.

#### ***5.15.4 Reasonably Foreseeable Future Actions***

RFFAs in the CESA will be dominated by mineral development. These actions include new or continued mining at Bald Mountain, North and South Operations, Gibellini, Green Springs, Centennial-Seligman Mining and Exploration Project, and the Pan Project. In general, roads, utilities and other infrastructure are in-place and maintenance would result in limited new surface disturbance. Of the 12,892 acres of anticipated new surface disturbance to be created by RFFAs, 12,567 acres would be created by mineral development in the CESA. Increased activity, including recreational activity and improved access to remote areas may also result in indirect impacts including continuing artifact collection, vandalism, and inadvertent site degradation. State and federal actions would require avoidance or mitigation of adverse effects to historic properties. However, mitigation only lessens the adverse impacts; it does not prevent them.

#### ***5.15.5 Cumulative Disturbance***

Past, present and RFFAs, including mining and related activities, road and utility development, oil and gas development, ranching, and private development as well as uncontrolled events such as wild land fires have resulted in or will create over 67,777 acres of surface disturbance which contribute directly to the cumulative degradation and loss of historic properties. These activities also contribute indirectly to the cumulative degradation and loss of historic properties by increased access and use, unauthorized artifact collection, vandalism, and inadvertent damage. No regulatory process exists regarding performing inventories of existing cultural resources in an area unless a federal nexus triggers such an inventory. As a result, no consistent or systematic records of the number of historic properties exist until and unless a project has been or is proposed in an area, particularly for undertakings completed before the implementation of environmental and preservation regulations in the 1970s.

Recognizing that 267 acres of exploration disturbance at Gold Rock are already included as a present action (Table 5.2-1), the Proposed Action would increase the disturbance within the



CESA by 3,679 acres to approximately 71,456 acres, or approximately 5 percent and facilitating access and recreational activity by the improvement and maintenance of roads.

### **5.15.6 Cumulative Effects**

Current and future development, including the Project, would contribute to direct and indirect cumulative adverse effects to historic properties. Federal actions would need to comply with the requirements of Section 106 of the NHPA. Adverse effects to historic properties resulting from these federal actions would be addressed individually. If possible, the historic properties would be avoided and protected. If avoidance is not feasible, an approved mitigation plan would be implemented. Adverse effects to historic properties from actions not governed by these requirements would continue.

The Proposed Action may not affect all of the historic properties that have been identified within the APE, or some of the properties may be re-evaluated and not be considered historic properties. As summarized in Section 4.13, all of the alternatives except the Western Tailings Storage Facility Alternative could affect as many as 8 historic properties. The APE for the Western Tailings Storage Facility Alternative includes an additional historic property. Consequently, the contribution of this Project to cumulative effects to historic properties could be as many as nine historic properties.

## **5.16 LAND USE AUTHORIZATION AND ACCESS**

### **5.16.1 CESA Boundary**

CESA for land use authorization and access includes the portion of Hunt Unit 131 west of the Humboldt-Toiyabe National Forest Ely District, and the Duckwater Shoshone Reservation (Figure 5.1-3). The total area for this CESA is 391,132 acres of land.

### **5.16.2 Introduction**

White Pine County is comprised predominantly of federally-managed lands with approximately 96 percent of White Pine County lands being administered by federal agencies, mainly BLM and the USFS (PLUAC 2007). Land use within the CESA consists mainly of agriculture, livestock grazing, mineral development and exploration, recreation, wildlife habitat, urban development, and renewable energy development. However, mining, agriculture, livestock grazing, and recreation are the predominant land uses within the CESA, and urban development (i.e., residential, commercial, and industrial) has historically been very nominal within White Pine County (White Pine County 2009).

### **5.16.3 Past and Present Disturbances**

Past and present disturbances that have affected land use and access in the CESA include mineral extraction and exploration; roads; and wild land fires. Total past and present surface disturbance within the CESA is 6,136 acres, which is approximately 2 percent of the CESA.

As summarized in Table 5.2-1, the total disturbance area for past and present mineral development and exploration actions within the CESA is approximately 681 acres. Past mineral development resulted in approximately 409 acres of surface disturbance. Approximately 89 acres of past and present disturbance occurred for sand and gravel operations and 33 acres for oil and gas development. Present mining operations include Gold Rock Exploration and the



Cathedral Canyon Exploration Project for a total of 272 acres of disturbance. Land use and access are typically restricted in active mining operations.

There are approximately 5,129 acres of disturbance within the CESA from roads as summarized in Table 5.2-1.

#### **5.16.4 Reasonably Foreseeable Future Disturbances**

RFFAs within the CESA consist of mineral development and exploration activities, utilities and infrastructure, restoration and seeding projects, and limited urban development. Total surface disturbance associated with RFFA is approximately 3,589 acres, which represents approximately 1 percent of the CESA.

Foreseeable future disturbances within the CESA for Land Use Authorization and Access include the Pan Mine Project and the Strawberry 69 kV Transmission Line as summarized in Table 5.2-1.

#### **5.16.5 Cumulative Disturbances**

The CESA for land use authorization and access is 391,132 acres. Of the total acreage within the CESA, approximately 9,725 acres of disturbance are associated with past, present and RFFAs, which is a disturbance of approximately 3 percent of the CESA. Recognizing that 267 acres of exploration disturbance at Gold Rock are already included as a present action (Table 5.2-1), the Proposed Action would increase the disturbance within the CESA by 3,679 acres, to 13,404 acres, or approximately 3 percent of the CESA. Approximately 7,765 acres of this disturbance is associated with mineral development and exploration, which has the most potential to impact land use and access by restricting other land uses during the life of the mining operation, restricting access during the life of the mining operation, and increasing traffic on major transportation routes. The disturbance resulting from the Proposed Action would mostly be reclaimed after mining operations are completed.

#### **5.16.6 Cumulative Effects**

Considering past, present, and RFFAs within the CESA that may affect land use and access combined with the Proposed Action, cumulative effects to land use and access would comprise approximately 3 percent of the total CESA. The Proposed Action, combined with past, present, and RFFAs, is anticipated to result in minimal additional traffic on US 50, SR 379 (Fish Creek Road), Green Springs Road or other roads; therefore, the Proposed Action would have a negligible increase of Annual Average Daily Traffic.

Cumulative effects to land use authorization and access under the Northern Power Line Alternative would be the same as those under the Proposed Action, with the exception that it would disturb approximately 33 fewer acres of BLM-administered land.

Cumulative effects to land use authorization and access under the Southern Power Line Alternative would be the same as those under the Proposed Action, with the exception that it would disturb approximately 31 fewer acres of BLM-administered land.

The cumulative effects to land use authorization and access under the Northwest Main Access Route Alternative would be similar to those under the Proposed Action, with the exception that the main access road would be in a different location and would disturb approximately 47 (Northern Power Line Route) or 53 (Southern Power Line Route) additional acres of BLM-administered land.



Cumulative effects to land use authorization and access under the Modified County Road Re-Route Alternative would be the same as those under the Proposed Action.

Cumulative effects to land use authorization and access under the Western Tailings Storage Facility would be similar to those under the Proposed Action, with the exception that the fenced area would be smaller (7,136 acres); therefore, there would be approximately 1,708 acres less long-term disturbance to BLM-administered land.

Cumulative effects to land use authorization and access under the No Action Alternative would include 267 acres of previously authorized disturbance to BLM-administered land within the Plan area.

## **5.17 VISUAL RESOURCES**

### **5.17.1 CESA Boundary**

The CESA boundary for visual resources is the viewshed from which a casual observer may distinguish elements of the Proposed Action and action alternatives from the background. This CESA is the area where the proposed facilities may be viewed within a distance of approximately 15 miles as dictated by surface topography (Figure 5.1-3). The total area of this CESA is 562,658 acres of land.

This CESA boundary was chosen because it encompasses the viewshed of the project as represented by the KOPs, based on the fact that it is the area where the project effects could be viewed relative to cumulative activities. Using a larger area would not capture any additional relevant effects.

### **5.17.2 Introduction**

The most common landforms in the area are wide basins, which are bounded by ranges, and cut by small creeks and drainages. Scenic variety exists in the topography and densities, arrangements, and colors of vegetation.

The majority of the CESA is under BLM jurisdiction, with some lands on the east side of the CESA under Humboldt-Toiyabe National Forest administration. The BLM-administered land in the CESA is managed under VRM Class III and IV. The proposed project facilities are primarily located within areas designated as VRM Class IV, with the exception of portions of the power line corridors.

It is important to note that the disturbance numbers addressed throughout this section relate specifically to surface disturbance. Direct comparison of specific impacts to visual resources across the CESA beyond surface disturbance was not included in this analysis. In the case of visual resources, the amount of surface disturbance may or may not directly relate to visual intrusions within the CESA. Based on the analysis conducted in Section 4.16 for the Proposed Action, existing roads and the pre-existing mining facilities associated with the reclaimed Easy Junior Mine were the primary past and present visual intrusions noted within the CESA in the vicinity of the Proposed Action.

### **5.17.3 Past and Present Disturbances**

The CESA is generally not disturbed visually other than for roads, mining and exploration operations and oil and gas wells. The largest type of visual disturbance is the presence of roads. Quantified past and present road disturbances (4,721 acres) have altered less than 1 percent of the CESA visually as summarized in Table 5.2-1.



The total disturbance area for past and present mineral development and exploration actions within the CESA is approximately 1,140 acres. Past and present mineral development and exploration projects within the CESA include the Easy Junior Mine, Mount Hamilton Mine, Green Springs Mine, Centennial Exploration Project, Wheeler Ridge Exploration Project, Gold Rock Exploration Project, Pan Mine Exploration Project, and sand and gravel operations. Limited surface disturbance (12 acres) from oil and gas wells has occurred. Vegetation clearing associated with mining and exploration activities can result in visual effects. Historic mining operations are in various stages of natural re-vegetation.

#### **5.17.4 Reasonably Foreseeable Future Disturbances**

The reasonably foreseeable future disturbances within the visual resources CESA include mineral exploration and mining. Foreseeable mineral exploration and mining operations include the Pan Mine Project, the Centennial- Seligman Mining and Exploration Project, and the Green Springs Mineral Exploration Project summarized in Table 5.2-1. These 3,754 acres represent less than one percent of the CESA.

#### **5.17.5 Cumulative Disturbances**

Of the total 562,658 acres covered by the CESA, approximately 10,322 acres of disturbance are associated with past, present and RFFAs, which is a disturbance of approximately 2 percent of the CESA. Recognizing that 267 acres of exploration disturbance at Gold Rock are already included as a present action (Table 5.2-1), the Proposed Action would increase the disturbance within the CESA by 3,679 acres to approximately 14,001 acres, or about 3 percent of the CESA.

#### **5.17.6 Cumulative Effects**

Implementation of the Proposed Action and identified RFFAs would increase the amount of mining-related infrastructure in the analysis area and extend it into some undeveloped areas that currently do not include mining-related facilities. Any newly reclaimed or unreclaimed linear features would continue to contrast with the existing landscape. Reclamation of mined areas in the CESA would reduce the visual contrast in the disturbed areas with adjacent vegetation. The reclaimed areas landscape would be revegetated primarily with grass and forbs and patches of shrubs and trees. The reclaimed areas would still be visible but would not be as obvious a visual impact as the mining activities themselves. Over time, the landscape views inclusive of reclaimed mining areas would become an acceptable part of the landscape. The eventual establishment of 'islands of diversity' (clusters of planted trees and shrubs) would restore a setting more similar to the original landscape in approximately 15 to 50 years.

Implementation of environmental protection measures or BMPs would minimize long-term effects to visual resources because disturbances would be reclaimed as soon as possible and light fixtures and berms would be installed to limit light pollution. Based on the analysis described in Section 4.16, the degree of contrast at each KOP would not conflict with the objectives of BLM VRM Class III or IV. The cumulative effects of the Proposed Action on the visual resources of the CESA would be long-term at each KOP.

The past and present actions in the CESA produce very little light pollution and have no meaningful adverse impact on the darkness of the night sky (BLM 2013c). The Proposed Action is anticipated to have impacts on the night sky during operation because lighting would occur in a remote location in the CESA. The RFFAs in the CESA, particularly the mining projects, would be expected to require a similar number and types of light sources for operation that the Proposed Action requires. The RFFAs in the CESA would be expected to have impacts when



considering collectively because each reasonably foreseeable mining project would occur in a remote location in the CESA widely separated from the other RFFAs, such that the intensity or concentration of light sources in any given area would not increase to a level producing regional light pollution. Light sources associated with the proposed project would be permanently removed from the project area and the CESA upon completion of reclamation.

Cumulative effects to visual resources under the other action alternatives would be the similar to those described under the Proposed Action.

## **5.18 RECREATION**

### **5.18.1 CESA Boundary**

The CESA for recreation is Hunt Unit 131 (Figure 5.1-4). The total area of this CESA is 998,955 acres of land.

### **5.18.2 Introduction**

Existing recreational use within the CESA is dispersed and includes fall and summer activities such as hiking, primitive camping, off-highway vehicle use, hunting, and fishing. During winter months and year-round, activities include winter trapping, shed antler collection, and predator hunting, snowshoeing, cross-country skiing, backcountry snowmobiling and ski opportunities. The primary land uses within the CESA are grazing, extractive activities (mining, gas and oil leases), and utility distribution. These land uses all have the potential to affect the quality and quantity of recreational activities within the CESA by affecting the actual acreage available for recreation; or visual impacts such as transmission lines, air pollution, or disturbances associated with extractive activities. While the area for dispersed recreation is expansive, developed recreation sites are limited in scope and capacity.

Recreational areas within the recreation CESA include Currant Mountain Wilderness (47,276 acres), Red Mountain Wilderness (20,490 acres), Shellback Wilderness (36,143 acres), White Pine Range Wilderness (40,013 acres), Bald Mountain Wilderness (22,367 acres) and the Humboldt-Toiyabe National Forest (331,483 acres).

### **5.18.3 Past and Present Disturbances**

Past and present mineral development and exploration projects within the CESA are summarized in Table 5.2-1 and include the Cottonwood Creek Geophysical Exploration Project, Robinson Mine, Easy Junior Mine, the Mount Hamilton Mine, the Griffon Mine, Gold Rock Exploration Project, Green Springs Mine, Wheeler Ridge Exploration Project, Pan Mine Exploration Project, the Cathedral Canyon Exploration Project, Centennial Exploration Project, and sand and gravel operations. Oil and gas operations are also present.

Lands occupied by extractive activities have reduced recreational value, may have restricted access or may reduce acreage available for recreation when vegetation and/or wildlife are adversely affected. Development of roads associated with mining, gas, and oil exploration can enhance recreational use of an area by improving access.

Past and present road disturbance, including United States highways, state routes, local/county roads, BLM and USFS roads, and other roads totals 11,773 acres (less than 1 percent) of the CESA. Roads provide access to recreation areas and can also become recreational opportunities themselves (i.e., Lincoln Highway, US 50/Loneliest Highway SRMA). For those



seeking solitude and a primitive outdoor experience, development of roads can impact the visual recreation experience.

Past and present disturbances within the CESA have impacted 28,701 acres or 2.9 percent of the CESA.

#### **5.18.4 Reasonably Foreseeable Future Disturbances**

RFFAs within the CESA consist of mine development and exploration, and would disturb another 3,863 acres in the CESA. Extractive activities and exploration projects result in an influx of temporary construction workers followed by permanent operations staff. The effect of increased population would be evident in White Pine County, where the existing population is relatively small. Increased dispersed use within the CESA could make it more difficult to recreate without encountering other people, or experiencing human effects. Increased population could result in higher demand for hunting permits, and thus increased competition for limited resources, traditionally used by the long term or permanent residents of the area.

#### **5.18.5 Cumulative Disturbances**

The effects of past actions, present actions and RFFAs on recreation in the CESA result mainly from restricted access as a result fencing and other access limitations associated with mining-related projects. While mines are operational, public access must be restricted for safety reasons. Of the total 998,955 acres covered by the CESA, approximately 32,564 acres of disturbance are associated with past, present, or RFFAs, which is a disturbance of approximately 3 percent of the CESA. Recognizing that 267 acres of exploration disturbance at Gold Rock are already included as a present action (Table 5.2-1), the Proposed Action would increase the disturbance within the CESA by 3,679 acres to approximately 36,243 acres, or about 4 percent of the CESA. However, with 395 acres of existing disturbance within the Plan area and approximately 3,456 acres to be reclaimed, the net long-term disturbance within the CESA due to the Proposed Action would be approximately 95 to 96 acres.

In addition to direct impacts to recreation resources, impacts to recreation resources can include exclusion from public access. Based on the analysis conducted in Section 4.17 approximately 9,289 acres of lands within the CESA, including the 267 acres of exploration identified as a present action in this cumulative effects analysis, would be impacted by the Proposed Action. However, this area of impact includes the 8,757-acre fenced mine area. In the short-term, the fence would exclude recreational users from this area. The fencing would be removed during the closure process, and public access to most areas would be re-established. Access to the 367-acre mine pit would be restricted for public safety reasons.

#### **5.18.6 Cumulative Effects**

Implementation of the Proposed Action would increase the extent of mining-related infrastructure in the CESA. Identified RFFAs would result in additional mining-related infrastructure within the CESA, cumulatively resulting in such infrastructure extending into areas that currently do not include mining-related infrastructure and fragmenting the area with the presence of power lines and roads. The mine pit may become a recreational viewing area. Construction and operation of the proposed facilities, in combination with the RFFAs, would affect the recreational experience of hunters and others that seek a remote recreational experience. Hunting is currently among the most prevalent recreational activity within the CESA. The impact of increased traffic and indirect effects on game animals should be minimal. Given the overall size of Hunt Unit 131, these cumulative effects are expected to be negligible.



because undeveloped areas within Hunt Unit 131 would continue to be available to recreational users.

For the most part the impacts would be temporary with the exception of unreclaimed mining features (pits and other facilities) that would remain inaccessible for recreation. Hunting could be affected indirectly as a result of cumulative impacts to game animal habitat and movement patterns. Increased traffic on public roads is not anticipated to affect access to public lands for recreation. Indirect effects on game animals are unlikely to have a measurable effect on hunting. Cumulative effects to recreational resources under the Northern Power Line Alternative would be the same as those under the Proposed Action, with the exception that it would disturb approximately 33 fewer acres of BLM-administered land.

Cumulative effects to recreational resources under the Southern Power Line Alternative would be the same as those under the Proposed Action, with the exception that it would disturb approximately 31 fewer acres of BLM-administered land.

The cumulative effects to recreational resources under the Northwest Main Access Route Alternative would be similar to those under the Proposed Action, with the exception that it would disturb approximately 47 (Northern Power Line Route) or 53 (Southern Power Line Route) additional acres of BLM-administered land.

Cumulative effects to recreational resources under the Modified County Road Re-Route Alternative would be the same as those under the Proposed Action.

Cumulative effects to recreational resources under the Western Tailings Storage Facility would be similar to those under the Proposed Action, with the exception that the fenced area would be smaller (7,136 acres); therefore, there would be approximately 1,708 acres less long-term disturbance to recreational resources under this alternative.

Cumulative effects to recreational resources under the No Action Alternative would include 267 acres of previously authorized disturbance within the Plan area.

## **5.19 SOCIOECONOMICS**

### **5.19.1 CESA Boundary**

The cumulative effects analysis considered potential cumulative effects in the socioeconomics CESA area described in Table 5.1-1 above and shown on Figure 5.1-3. The CESA was selected for analysis as impacts from the Proposed Action and alternatives would be realized in this area, and therefore represents where any cumulative impacts may be realized.

### **5.19.2 Introduction**

The social and economic structures and relationships in the analysis area are described in Section 3.18. The analysis presented in Section 4.16 includes a detailed description of the potential direct and indirect economic effects of all alternatives.

### **5.19.3 Past and Present Activities**

All data and findings in Sections 3.18 and 4.16 apply to and are utilized in the cumulative impacts analysis. The past and present land uses and economic activities in the CESA have had, and continue to have, direct, indirect, and induced effects on socioeconomics in the CESA through changes to employment (both type and numbers), changes in housing availability,



changes to the population, and changes to the fiscal conditions of local jurisdictions. These past and current actions have resulted in the current socioeconomic conditions in the CESA as described in Section 3.18.

#### **5.19.4 Reasonably Foreseeable Future Activities**

Reasonably foreseeable future activities in the CESA include mineral exploration, the start-up of new mining operations such as the Pan, and Gibellini mines; the expansion of existing mining operations such as the Centennial-Seligman Exploration and Mining Project and Bald Mountain Mine; the closure of existing mining operations, oil and natural gas exploration and development; construction and operation of the ON Line 230/500 kV transmission line; and other projects as presented in Section 5.4.

Each RFFA could, if and when implemented, result in direct, indirect, and induced effects on the socioeconomic conditions in the CESA. These effects would be realized from the employment of workers during construction, operation, and decommissioning (as relevant) of the RFFAs, from the spending of project proponents in the CESA, and from the taxes collected by local jurisdictions. Construction and/or operation of each RFFA would create a positive impact on local economies and increased employment opportunities, drawing on the local and regional workforce. Concurrent construction or operation of similar projects could result in a demand for labor that cannot be met by the region's labor pool, which could lead to an influx of nonlocal workers. This population increase could impact socioeconomic conditions and the demand for public services and utilities.

#### **5.19.5 Cumulative Effects**

The economies of the two counties are, and have been, dependent to a large degree on mining, the intensity of which is determined to a large extent by the market price for gold, silver, and other extracted minerals. Consequently, economic activity tends to cycle between boom and bust. When mineral prices are high, employment and wages rise and a shortage of skilled workers develops. Home prices tend to rise as new employees move into the area and local businesses profit from increased spending. New businesses are started and new commercial properties may be developed. A drop in mineral prices or other limitations on mine development results in a reversal of this process; employment and spending fall, home prices may stagnate or fall, and spending at local businesses drops, some commercial enterprises may go out of business, and commercial vacancy rates may increase.

As described in Section 4.16, the Proposed Action would result in socioeconomic impacts in the short- and long-term by generating additional employment positions, which would result in increased population and income, which in turn would result in increased demand for housing, schools, law enforcement, fire protection, and other services and infrastructure. The Proposed Action would, alone, have minor to moderate positive and negative impacts as presented in Section 4.16.

The positive and negative socioeconomic impacts of the Proposed Action, in combination with the positive and negative impacts attributable to the RFFAs presented above, could be significant. However, there is considerable uncertainty regarding the potential impacts that may be realized from the RFFAs; many of the RFFAs are mining projects, which may or may not come to fruition depending upon the price of the targeted commodity. In addition, there is uncertainty regarding the timing of the potential impacts: for instance, the Mount Hope project has been permitted for several years but no construction activities have started. The uncertainty regarding which RFFAs may actually be realized, and the timing of those potential impacts,



makes it difficult to accurately ascertain the potential cumulative effects; if all RFFAs and the Proposed Action were undertaken simultaneously, socioeconomic impacts (including but not limited to large increases in temporary and permanent populations and exacerbation of the existing housing shortage) would be significant. However, if the construction of the RFFAs is staggered over time, the potentially-significant impacts could be ameliorated to some extent. In addition, both counties would realize revenue from the Proposed Action and RFFAs, including sales taxes and ad valorem taxes from net proceeds of other mining operations, which would serve to ameliorate some of the potential negative cumulative impacts.

Comparing the potential impacts under the Proposed Action to the sum of the employment positions that may be created by the RFFAs, and with the potential capital and operating costs of the RFFAs, regardless of the timing of the RFFAs, a relatively small number of construction and operations positions would be created, and relatively small capital and operating costs would be incurred under the Proposed Action.

Cumulative effects to socioeconomic resources under each of the alternatives would be similar to those under the Proposed Action.

The No Action Alternative would have no additional negative or positive socioeconomic impacts, and thus no contribution to any cumulative effects.

## **5.20 HAZARDOUS AND SOLID WASTE**

### **5.20.1 CESA Boundary**

The CESA for hazardous materials and wastes (Figure 5.1-6) is the Plan area and second water supply well and infrastructure; corridors for the Proposed Action power line route and Northern and Southern power line route alternatives; the main access route and northwestern main access route alternative; the Pan and Mount Hamilton mines; and potential transportation routes to the Plan area from the following major hubs from which materials would be transported:

- From Eureka via US 50 (Lincoln Highway) east;
- From Ely via US 50 west; or
- From Elko via I-80 east or from Utah via I-80 west to US 93 and south on US 93 or US 93A to US 93, respectively, to Ely, west on US 50.

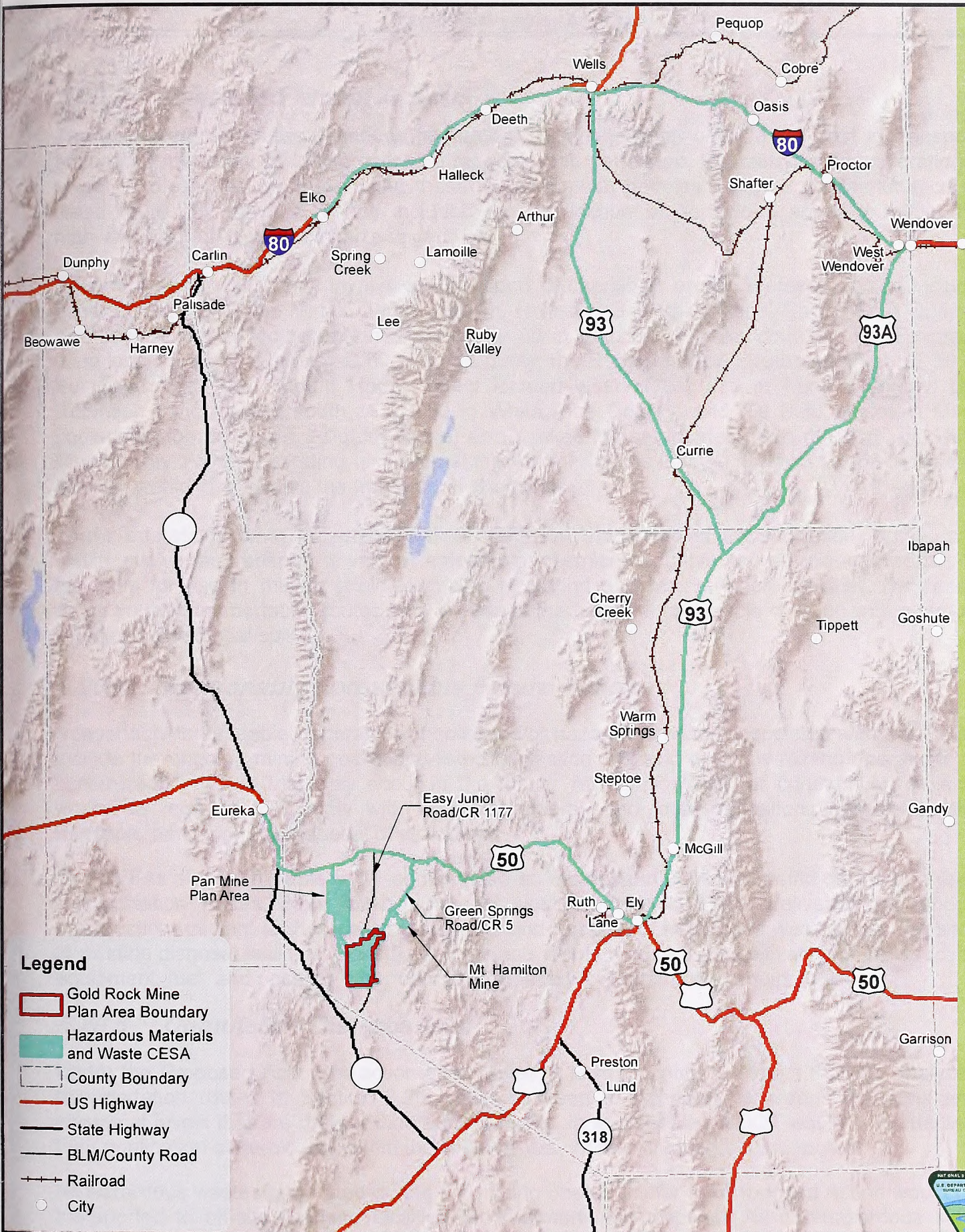
The total area of this CESA is 41,547 acres of land.

### **5.20.2 Introduction**

This section provides an inventory of existing or reasonably foreseeable future mine operations that transport hazardous materials on the transportation routes analyzed for the Proposed Action (Section 3.20). Currently, the Plan area contains disturbance from the Easy Junior Mine, however, no hazardous or solid waste remains at the site following reclamation. Under the Proposed Action, the use, storage, transport, and disposal of hazardous materials or solid wastes would change. Therefore, there would be an increase in the cumulative effects of these waste management activities from the Proposed Action associated with the CESA.

It is important to note that the disturbance numbers addressed throughout this section relate specifically to surface disturbance. In the case of hazardous materials and wastes, the amount of surface disturbance may or may not directly relate to effects within the CESA.







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### **5.20.3 Past and Present Actions**

The transportation routes described in Section 3.20 have been used in the past to transport hazardous materials, including chemical reagents and petroleum, to nearby mining operations, towns, and ranches. Vehicles using these routes contain petroleum products. Maintenance of these routes by the NDOT has included the application of herbicides annually within the highway Right-of-Way to minimize vegetation.

Present actions which may involve the transport of chemicals on the routes analyzed include mineral activities of the Midas, Jerritt Canyon, Hollister, Goldstrike, Mike, Carlin, Gold Quarry, and Leeville mines located north of Interstate 80 in Elko and Eureka counties; the Emigrant Mine located south of Interstate 80 in Elko County; the Ruby Hill Mine located south of US 50 in Eureka County; the Mount Hope Project located west of SR 278 in Eureka County; the Robinson Mine located south of US 50 in White Pine County; and the Bald Mountain Mine (including Mooney Basin, Alligator Ridge, and Yankee Mines) located north of US 50 in White Pine County. When operating, activities at the Ruby Hill Mine located south of US 50 in Eureka County, would also involve the transport of chemicals.

These operations bring increased vehicle traffic on the analyzed transportation routes, and would involve the transport of varying amounts of chemical reagents and petroleum products to the sites for use in mining exploration and operation and maintenance activities. Increased traffic on the transportation routes also increases the potential for vehicle collision with a supply vehicle and potential spills.

### **5.20.4 Reasonably Foreseeable Future Actions**

Reasonably foreseeable generators of solid and/or hazardous waste associated with the CESA include the ongoing mining operations listed in Section 5.3, and any new mining operations or construction projects that may occur in the future. All future mining or construction projects would be required to comply with all state, federal, and local regulations relevant to the transport, handling, and disposal of all wastes.

The RFFAs shown in Table 5.2-1 could cause an increase in vehicular traffic on the analyzed transportation routes. New mining projects would require chemical deliveries to support construction, mining, and processing activities and removal of hazardous wastes from the sites to existing disposal facilities. Construction projects would require the mobilization of construction equipment, fuel, and possibly other chemicals needed for construction equipment.

### **5.20.5 Cumulative Disturbances**

Under the Proposed Action or action alternatives, it is reasonable to expect that the analyzed transportation routes in Section 3.20 would be used to transport hazardous materials and wastes at levels that are greater than current levels. In addition, the NDOT would continue with their application of herbicides within the Right-of-Way of these transportation routes.

All hazardous wastes generated during the mining operations for the Proposed Action would be transported to off-site licensed facilities for treatment and disposal. All non-hazardous solid wastes would be disposed of in the proposed on-site Class III landfill. In the context of existing and reasonably foreseeable solid and hazardous waste generation locally and regionally, the Proposed Action would constitute an increase in hazardous waste generation and solid waste management in the Plan area, as well as increased transportation of hazardous waste on analyzed transportation routes.



Many of the past, present, and reasonably foreseeable future projects have the potential for chemical and petroleum spills. Implementation of the Proposed Action would result in an increase in the volume of fuels and chemicals transported with a proportionate increase in the risk of spills during transport on public travel routes (Figure 5.1-6). With implementation of environmental protection measures or BMPs, it is improbable that a leak or spill from mining operations would be discharged offsite or reach potential water sources.

The cumulative impacts on hazardous waste are primarily associated with mining projects. An increase in traffic associated with the Proposed Action and other reasonably foreseeable future actions could increase the likelihood of vehicle collisions on the access roads, thus possibly increasing the probability of accidents resulting in a release of a hazardous material. Use of off-site hazardous waste disposal facilities would increase for disposal of the increased volumes of hazardous waste.

#### **5.20.6 Cumulative Effects**

Given the existing capacity and regulatory framework for generators, transporters, and storage and disposal facilities, the Proposed Action, in combination with the other projects, would have negligible effects on hazardous materials and wastes generation and management. As noted in Section 3.20, the Proposed Action would comply with all local, state, and federal regulatory requirements.

Cumulative effects associated with hazardous materials and wastes under each of the alternatives would be the same as those under the Proposed Action.

Cumulative effects associated with hazardous materials and wastes under the No Action Alternative would include the use of hazardous materials and production of wastes related to previously authorized exploration operations within the Plan area.



## **CHAPTER 6**

### **CONSULTATION AND COORDINATION**

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This chapter describes specific actions taken by the BLM EFO to consult and coordinate with Native American Tribes, government agencies, and interested groups, and to involve the interested general public during preparation of this EIS.

The BLM published the initial NOI in the Federal Register on September 5, 2013, formally announcing the intent to prepare an EIS for the Gold Rock Mine Project. Publication of the NOI initiated the scoping process and invited participation of affected and interested agencies, organizations, and the public in helping the BLM determine the scope and issues to be addressed in the EIS.

Public involvement is an important part of the environmental analysis under the NEPA process. Federal agencies are required to make “diligent efforts” to involve the public early and often in preparing and implementing their NEPA procedures, to inform the public by providing public notice of NEPA-related hearings, public meetings, and availability of documents, and to solicit appropriate information from the public (40 Code of Federal Regulation 1506.6).

The goal of the public involvement process is to foster public understanding of the project and allow participation in the analysis and decision-making process regarding the proposed Gold Rock Mine Project EIS.

#### **6.1 COOPERATING AGENCIES AND CONSULTATION**

Cooperating agencies were invited to participate in the NEPA process including: review of analyses, contribution of technical expertise, and assisting in the response to public comments as required by their jurisdiction or regulatory authority. Memoranda of Understanding (MOU) were developed between the cooperating agencies and the BLM. The purpose of the MOU is to:

- Confirm the formal designation of the BLM as lead agency in the EIS process with the responsibility for the conclusions of the draft EIS and final EIS;
- Formally designate cooperating agencies in the EIS planning process;
- Formalize and provide a framework for cooperation and coordination between the BLM and cooperating agency that is necessary in order to successfully complete the EIS in a timely, efficient and thorough manner;
- Describe the respective roles, responsibilities and expertise of each entity in the planning process; and
- Ensure that the working relationship between the BLM and cooperating agency meets the purposes and intent of NEPA.

As part of the federal review process in response to Midway’s proposed Gold Rock Mine Project, the BLM sent letters to the stakeholders below to request participation as cooperating agencies for the NEPA process and EIS documentation. Cooperating agencies included:

- Duckwater Shoshone Tribe
- Eureka County Board of Commissioners;



- NDOW; and
- White Pine County Board of County Commissioners

All of these stakeholders have signed MOUs.

Consultation with Native American tribes is part of the NEPA scoping process and a requirement of FLPMA. On August 7, 2013 the BLM mailed a letter to the 12 Tribal governments listed below requesting their assistance in identifying any traditional religious sites or cultural sites of importance that they believe may be impacted by the proposed Gold Rock Mine Project.

- Battle Mountain Band Council;
- Confederated Tribes of the Goshute Indian Reservation, NV-UT;
- Duckwater Shoshone Tribe of the Duckwater Shoshone Reservation, NV;
- Elko Band Council;
- Ely Shoshone Tribe of Nevada;
- Las Vegas Paiute Tribe of the Las Vegas Indian Colony;
- Moapa Band of Paiutes of the Moapa River Indian Reservation, NV;
- Paiute Indian Tribe of Utah;
- South Fork Band Council;
- Te-Moak Tribe of the Western Shoshone Indians of Nevada;
- Wells Band Council; and
- Yomba Shoshone Tribe of the Yomba Reservation, NV

The BLM met with the Confederated Tribes of the Goshute Reservation on April 4, 2014, the Duckwater Tribe on April 28, 2014, and with the Ely Shoshone Tribe on August 12, 2014. During each meeting, the BLM provided an overview of the NEPA process and described the status of the Gold Rock Mine Project EIS. None of the Tribes identified any traditional cultural properties or other concerns.

## **6.2 SCOPING PROCESS**

### ***6.2.1 Notice of Intent***

The publication of the NOI initiated a formal 30-day scoping period and announced the locations and dates of the public scoping meetings. The scoping period was slated to close on October 7, 2013. However, the U.S. federal government was shut down between October 1, 2013 and October 17, 2013. To accommodate submittal of public comments for a full 30-day period, the BLM extended the scoping period by one week, from October 18, 2013 to October 25, 2013. On October 18, 2013 the BLM posted a notification regarding this extension on its website.

The BLM's email account that was set up to receive scoping comments on the Gold Rock Mine Project Environmental Impact Statement (EIS) during the initial scoping period (September 5, 2013, through October 7, 2013) was deleted during the federal government shutdown. Therefore, the BLM issued a second NOI for the Gold Rock Mine Project EIS on March 28,



2014 to extend the scoping period, invite members of the public to submit comments, and request that anyone who submitted comments by email during the initial 30-day scoping period resubmit their comments. No scoping meetings were held during this 30-day extension of the public input period, as these meetings were not affected by the technical difficulties with the email account.

### ***6.2.2 Legal Notices and Press Releases***

Public notices were published with the following news sources:

- Reno Gazette Journal September 18, 2013;
- Wendover High Desert Advocate September 19, 2013 (printed and posted to the Internet on September 18, 2013);
- Eureka Sentinel September 19, 2013; and
- Ely Times September 20, 2013.

A BLM press release was sent to the Associated Press and posted to the Ely District webpage on September 6, 2013.

For the extended scoping period, public notices were published in the following sources:

- Reno Gazette Journal April 3, 2014;
- Wendover High Desert Advocate April 3, 2014;
- Eureka Sentinel April 4, 2014; and
- Ely Times April 4, 2014.

A BLM press release was sent to the Associated Press and posted to the Ely District webpage on March 28, 2014.

### ***6.2.3 Project Website***

A website for the project was launched concurrently with publication of the initial NOI under BLM Projects on the BLM Ely District webpage ([http://www.blm.gov/nv/st/en/fo/ely\\_field\\_office.html](http://www.blm.gov/nv/st/en/fo/ely_field_office.html)), and will remain active throughout the life of the project. Scoping information posted to the project website includes the NOI, the press release, and the scoping letter that includes the project description, comment form, and proposed facilities figure.

### ***6.2.4 Scoping Letter***

The BLM prepared and mailed a “Dear Interested Party” letter to 401 interested parties on the EIS mailing list on September 6, 2013. This letter provided an overview of the proposed project, a proposed facilities figure, and a scoping comment form, and included information regarding participation in the public involvement process, and the schedule for the public scoping meetings. The mailing list of potentially interested parties was compiled by the BLM from existing information on persons with known and potential interest in the project and previous NEPA action mailing lists.



For the extended scoping period, The BLM prepared and mailed a “Dear Interested Reader” letter to 401 interested parties on the EIS mailing list on Friday, March 28, 2014. This letter provided information on the proposed Gold Rock Mine Project and solicited comments to help identify specific issues and concerns that BLM should consider and document in the EIS.

### **6.2.5 Scoping Meetings**

The following three scoping meetings were held at locations in Nevada:

- Ely, Nevada September 24, 2013;
- Eureka, Nevada September 25, 2013; and
- Reno, Nevada September 26, 2013.

The meetings were held from 4:00 p.m. to 7:00 p.m. All attendees were asked to sign in and provide their contact information. Lists of individuals who signed attendance sheets at the public meetings are included Scoping Summary for the Gold Rock Mine Project Environmental Impact Statement (ARCADIS 2014). Representatives from the BLM, Midway, and ARCADIS were present at each meeting to answer questions, discuss the project, and accept public comments. Attendees at the scoping meetings were provided with handouts describing the project as well as the NEPA process. Comment forms were also provided to all attendees to facilitate submission of written scoping comments. The public was given the option to provide comments during the meeting, using regular mail, fax, or e-mail. In addition, information regarding the project and the NEPA process was posted on the BLM’s project website.

### **6.2.6 Scoping Response**

All responses received by BLM were logged, analyzed, and summarized to discern issues of concern. A total of 60 letters, emails, and faxes were received in response to the requests for public comment regarding the project. Of those responses, 44, or approximately 75 percent, were unique Individual/Unaffiliated responses. Nine responses were received from various Sovereign Nation or Government Employees, Organizations, or Unions (15 percent), three responses from Conservation/Preservation Organizations (3 percent), and four responses were received from a Local Agency/Elected Official (7 percent). Copies of all letters, comment forms, faxes, and e-mails received are available in the Scoping Summary for the Gold Rock Mine Project Environmental Impact Statement (ARCADIS 2014).

Comments received in response to solicitations, including names and addresses of those who commented, are considered part of the public record on this EIS and are available for public inspection at the BLM Ely District Office.

## **6.3 DEIS MAILING LIST**

An EIS mailing list of interested persons was initially assembled from the scoping mailing list with the addition of persons who expressed interest in being added to the mailing list during and subsequent to scoping. The mailing list for the project was revised to add those persons who provided comments in response to scoping, requested to be on the mailing list, or signed a scoping meeting attendance list. Respondents that provided more than one comment letter were listed only once in the mailing list.



## 6.4 DEIS NOTIFICATION AND DISTRIBUTION

The Gold Rock Mine DEIS review period will open on publication of the Notice of Availability (NOA) for the DEIS in the Federal Register. This will begin a 45-day comment period. The NOA will specify dates for the comment period and identify public meeting locations and dates. The BLM will also announce the availability of the DEIS by publishing notices of availability in local newspapers, on the project website, and through mailing. The DEIS will be widely distributed to interested parties identified in the updated mailing list, as described above, and also made available via the internet.

## 6.5 NEXT STEPS IN THE PLANNING PROCESS

Comments received on the DEIS will be evaluated and modifications to the DEIS will be made as needed. A second NOA will be published in the Federal Register to notify the public of the availability of the FEIS, a 30-day public protest period under 43 CFR 1610.5-2 will follow, and a copy of the document will be filed with the EPA.

## 6.6 LIST OF PREPARERS AND REVIEWERS

Table 6.6-1 shows the names of BLM, cooperating agency, and Midway staff that participated in the preparation of the EIS. Table 6.6-2 shows the names of third-party contractor staff that contributed to the EIS.

**Table 6.6-1 List of Preparers and Technical Specialists**

<b>Role/Resource</b>	<b>Name</b>
<b>BLM Ely District Office</b>	
Project Manager/ Water Resources/Hazardous Materials and Wastes	Dan Netcher
Field Manager	Jill Moore
Assistant Field Manager	Mindy Seal
Socioeconomics	Travis Young
Public Relations	Chris Hanefeld
Geology and Minerals/Geotechnical Issues	Miles Kreidler
Paleontology/Cultural Resources/Archeology	Leslie Riley
Air Quality	David Jones Craig Nicholls
Soils/ Prime and Unique Farmlands/Floodplains/Riparian/Wetlands/ Range Resources/Vegetation/ Invasive, Non-Native Plant Species	Cody Coombs Scott Standfill Chris McVicar
Land Use Authorizations and Access/Rights-Of-Way	Stephanie Trujillo
Forest Resources/Fuels	Cody Coombs
Wildlife/Migratory Birds/Special Status Wildlife and Plant Species	Marian Lichtler
Wild Horses	Ruth Thompson
Wilderness Values	Emily Simpson
Visual Resources/Recreation	Erin Rajala
Native American Religious and Traditional Values/Tribal Coordinator	Elvis Wall
<b>Midway Gold US Inc.</b>	
Vice President of Environmental Affairs, Midway main contact	Tom Williams
Associate Director of Environmental Affairs, project coordination	Rebecka Snell
Vice President and General Manager of Nevada Operations, local Midway management	Mike Protani
Environmental Manager	Carol Adams



**Table 6.6-1 List of Preparers and Technical Specialists**

<b>Role/Resource</b>	<b>Name</b>
Senior Systems Administrator	Andy Britton
GIS Specialist	Aaron Ratke
Corporate Mining Engineer	Dave Mosch
Vice President of Geological Service, geologic information	Bill Neal
Senior Vice President of Operations, engineering information	Rick Moritz
<b>Duckwater Shoshone Tribe (Cooperating Agency)</b>	
Division Manager, Division of Natural Resources	Annette George-Harris
Division of Natural Resources, Environmental Department	Maurice Frank-Churchill
<b>Eureka County Board of Commissioners (Cooperating Agency)</b>	
Chairman, Eureka County Board of Commissioners	J.J. Goicoechea
Natural Resources Manager	Jake Tibbitts
<b>Nevada Department of Wildlife (Cooperating Agency)</b>	
Eastern Region Mining Biologist	Lindsey Lesmeister
Habitat Biologist, Ely	Maira Kolada
Game Biologist	Curt Baughman
Game Biologist	Mike Podborny
<b>White Pine County Board of County Commissioners (Cooperating Agency)</b>	
Commissioner	Richard Howe
Chairman, White Pine County Board of County Commissioners	John S. Lampros
Roads Superintendent, White Pine County	William (Bill) Miller

**Table 6.6-2 Third Party Contractor – ARCADIS U.S., Inc.**

<b>Role/Resource</b>	<b>Name</b>	<b>Experience</b>
Project Manager	Jerry Koblitz	B.S. Natural Resource Management 41 years of experience
Assistant Project Manager/Water Resources	Elizabeth Duvall	BS Environmental Resource Management 15 years of experience
NEPA Technical Advisor	David Cameron	BS Biology MS Animal Ecology 35 years of experience
Quality Control/Senior Review/ Cumulative Effects	Eric Cowan	GIS Certificate/Business Studies 21 years of experience
Water Resources	David Lipson	BS Geology MS Hydrogeology PhD Geological Engineering 24 years of experience
	Gaston Leone, P.E.	B.S. Civil Engineering M.S. Civil Engineering 18 years of experience
	Jeff Barry	B.S. Forest Management M.S. Hydrology PhD Civil Engineering 15 years of experience
Geology and Minerals/Geotechnical Issues	Benjamin Black	B.S. Geology M.S. Geological Engineering 18 years of experience



**Table 6.6-2 Third Party Contractor – ARCADIS U.S., Inc.**

<b>Role/Resource</b>	<b>Name</b>	<b>Experience</b>
	Dan Bonner	B.S. Environmental Engineering M.S. Civil Engineering P.E. - Nevada
Paleontology/Soils/Floodplains	Jason Adams	M.S. Geological Sciences 5 years of experience
Prime and Unique Farmlands/Wild Horses/Land Use Authorizations and Access/Visual Resources/Recreation	Kathryn Cloutier	B.A. Biology/Pre-Medicine M.S. Environmental Management/Natural Resources 27 years of experience
Air Quality	Susan Riggs	B.S. Biology M.S. Environmental Science 18 years of experience
Wildlife/Migratory Birds/Special Status Wildlife Species	Allison Haraminac	B.S. Biology M.S. Ecology and Evolutionary Biology 6 years of experience
	Kelly Portue	B.S. Fisheries and Wildlife Biology 6 years of experience
Vegetation/Invasive, Non-Native Plant Species/ Riparian/Wetlands/ Special Status Plant Species	Carla DeMasters	B.S. Economics (Environmental and Natural Resource) M.A. Geography (Biogeography) 10 years of experience
Forest Resources/Fuels/Range Resources	Jocelyn Finch	B.A. Biology and Anthropology M.S. Forestry 13 years of experience
Cultural Resources/Archeology/Native American Religious and Traditional Values	Carl Späth, Ph. D, RPA	B.A. Anthropology M.A. Anthropology Ph.D. Anthropology 36 years of experience
Socioeconomics/Environmental Justice	Conrad Mulligan	B.A. International Politics M.S. Marine Science 18 years of experience
Cumulative Effects	Tara Corbett	B.A. Liberal Arts M.S. Geography 14 years of experience
GIS/Mapping	Jie Chen	M.A. Geography 8 years of experience
Editor	Deb Ballheim	B.A. English Composition/Linguistics 16 years of experience
Document Control Database Management Word Processing Project Record	Carrie Womack	B.S. Animal Science 25 years of experience



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## CHAPTER 7

# REFERENCES, ACRONYMS AND ABBREVIATIONS, GLOSSARY

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## 7.2 ACRONYMS AND ABBREVIATIONS

ACEC	Areas of Critical Environmental Concern
ACHP	Advisory Council on Historic Preservation
afy	Acre-Feet Per Year
AIRFA	American Indian Religious Freedom Act
AML	Appropriate Management Level
amsl	Above Mean Sea Level
ANFO	Ammonium Nitrate / Fuel Oil Mixture
APE	Area of Potential Effect
APLIC	Avian Power Line Interaction Committee
ARPA	Archaeological Resources Protection Act of 1979
ATV	All-Terrain Vehicle
AUM	Animal Unit Month
BAPC	Nevada Division of Environmental Protection Bureau of Air Pollution Control
BARCAS	Basin and Range Carbonate Rock Aquifer System
BATFE	Bureau of Alcohol, Tobacco, Firearms, and Explosives
BEA	United States Bureau of Economic Analysis
bgs	Below Ground Service
BBCS	Bird and Bat Conservation Strategy
BBS	Breeding Bird Survey
BLM	Bureau of Land Management
BMP	Best Management Practice
CAA	Clean Air Act
Census	United States Bureau of the Census
CEQ	Council on Environmental Quality
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980



CESA	Cumulative Effects Study Area
CFR	Code of Federal Regulations
cfs	Cubic Feet Per Second
cm/sec	Centimeters Per Second
CO <sub>2</sub>	Carbon Dioxide
CO <sub>2</sub> e	Carbon Dioxide Equivalent
°F	Degrees Fahrenheit
dBA	A-weighted Decibel
DEIS	Draft Environmental Impact Statement
DOE	Department of Energy
DR	Decision Record
EA	Environmental Assessment
EFO	Egan Field Office
EIS	Environmental Impact Statement
EMS	Emergency Medical Service
EMT	Emergency Medical Technician
EO	Executive Order
EPA	Environmental Protection Agency
EPM	Environmental Protection Measure
ESA	Endangered Species Act of 1973
ESD	Ecological Site Descriptions
ET	Evapotranspiration
FEIS	Final Environmental Impact Statement
FLPMA	Federal Land Policy and Management Act
FMMP	Fluid Management and Monitoring Plan
FONSI	Finding of No Significant Impact



GAP	Gap Analysis Program
GBNP	Great Basin National Park
GHG	Greenhouse Gas
GID	General Improvement District
GLO	General Land Office
gpd	Gallons Per Day
gpm	Gallons Per Minute
HAP	Hazardous Air Pollutants
HDPE	High Density Polyethylene
HMA	Herd Management Area
KOP	Key Observation Point
kV	Kilovolt
lbs/acre	Pounds Per Acre
LPSL	Low-Permeability Soil Layer
LR2000	Legacy Rehost 2000 System
MACT	Maximum Achievable Reduction Technology
Midway	Midway Gold US Inc.
MGD	Million Gallons Per Day
MOA	Memorandum of Agreement
MOU	Memorandum of Understanding
MOVES	Motor Vehicle Emission Simulator
MSHA	Mine Safety and Health Administration
MWMP	Meteoric Water Mobility Procedure
MWP	Mount Wheeler Power Company
NAAQS	National Ambient Air Quality Standards
NAC	Nevada Administrative Code



NAGPRA	Native American Graves Protection and Repatriation Act
NDEP	Nevada Division of Environmental Protection
NDF	Nevada Division of Forestry
NDOM	Nevada Division of Minerals
NDOT	Nevada Department of Transportation
NDOW	Nevada Department of Wildlife
NDWR	Nevada Division of Water Resources
NEPA	National Environmental Policy Act of 1969
NHD	National Hydrography Dataset
NHP	Nevada Highway Patrol
NHPA	National Historic Preservation Act of 1966
NNHP	Nevada Natural Heritage Program
NOA	Notice of Availability
NOI	Notice of Intent
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
NSPS	New Source Performance Standards
NTT	Sage-Grouse National Technical Team
opt	ounces per ton
PAG	Potentially Acid Generating
PGA	Peak Ground Acceleration
PGH	Preliminary General Habitat
PILT	Payment In Lieu of Taxes
Plan	Gold Rock Mine Plan of Operations
PLS	Pure Live Seed
PLUAC	Public Land Users Advisory Committee



PM2.5	Particulate Matter 2.5 Microns
PM10	Particulate Matter 10 Microns
PMU	Population Management Unit
PPH	Preliminary Priority Habitat
ppm	Parts Per Million
PSD	Prevention of Significant Deterioration
RAC	Resource Advisory Council
RCRA	Resource Conservation and Recovery Act
RFFA	Reasonably Foreseeable Future Actions
RMP	Resource Management Plan
ROD	Record of Decision
ROW	Right-of-Way
SHPO	State Historic Preservation Office
SNWA	Southern Nevada Water Authority
SPCC	Spill Prevention, Control, and Countermeasures
SR	State Route
SRMA	Special Recreation Management Area
SWIP	Southwest Intertie Project
TCP	Traditional Cultural Property
tpd	Tons Per Day
tph	Tons Per Hour
µg/m <sup>3</sup>	Micrograms Per Cubic Meter of Air
µS/cm	Microsiemens Per Centimeter
US	United States (U.S.)
USDOT	United States Department of Transportation
USFS	United States Forest Service



USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey
VRM	Visual Resource Management
WRCC	Western Regional Climate Center
WRDA	Waste Rock Disposal Area
WSA	Wilderness Study Area



### 7.3 GLOSSARY

**Acid Mine Drainage:** Water from pits, underground workings, and waste rock containing free sulfuric acid. The formation of acid drainage is primarily due to the weathering of iron pyrite and other sulfur-containing minerals. Acid drainage can mobilize and transport heavy metals which are often characteristic of metal deposits.

**Acid Rock Drainage (ARD):** Drainage that occurs as a result of natural oxidation of sulfide minerals contained in rock that is exposed to air and water. It is not confined to mining activities, but can occur wherever sulfide-bearing rock is exposed to air and water.

**Acre:** A unit of land measure equal to 43,560 square feet.

**Acre-foot:** The amount of water or sediment volume which covers an acre of land to a depth of one foot; an acre-foot is equal to 325,851 gallons or 43,560 cubic feet.

**Affecting:** Will or may have an effect on.

**Alluvium:** A general term for clay, silt, sand, gravel, or similar unconsolidated detrital material, deposited during comparatively recent geologic time by a stream or other body of running water.

**Alluvial Fan:** A low, outspread, gently sloping mass of loose rock material, shaped in plan view like an open fan or a segment of a cone; deposited by a stream at the place where it issues from a narrow mountain valley upon a plain or broad valley, or where a tributary stream is near or at its junction with the main stream, or wherever a constriction in a valley abruptly ceases or the gradient of the stream suddenly decreases.

**Animal Unit Month (AUM):** The amount of forage required by one cow and calf, or their equivalent, for one month.

**Aquifer:** A zone, stratum, or group of strata acting as a hydraulic unit that stores or transmits water in sufficient quantities for beneficial use.

**Bedrock:** Solid rock exposed at the surface of the earth or overlain by unconsolidated material, weathered rock, or soil.

**Borehole:** A hole with a drill, auger, or other tools for exploring strata in search of minerals, for water supply, for blasting purposes, for proving the position of old workings and faults, and for releasing accumulations of gas or water.

**Cooperating Agency:** Any Federal agency other than a lead agency which has jurisdiction by law or special expertise with respect to any environmental impact involved in a proposal (or a reasonable alternative) for legislation or other major Federal action significantly affecting the quality of the human environment. The selection and responsibilities of a cooperating agency are described in Section 1501.6. A State or local agency of similar qualifications or, when the effects are on a reservation, an Indian Tribe, may by agreement with the lead agency become a cooperating agency.

**Cumulative Impact:** The impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions.



Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

**Deposit:** A natural accumulation, such as precious metals, minerals, coal, gas, oil, etc., that may be pursued for its intrinsic value; gold deposit.

**Designated Basin:** Groundwater basin where permitted ground water rights approach or exceed the estimated average annual recharge and the water resources are being depleted or require additional administration.

**Dewatering:** The removal or extraction of water from a pit, tunnel, or other conduit containing volumes of water.

**Doré:** Metal alloy composed of gold, silver, and other precious metals. Bullion containing unseparated metallic gold and silver.

**Downgradient:** In relation to any fixed point with regard to the direction of drainage or flow, downgradient is at a lower point of elevation than the chosen observation point and thus downward in relation to the direction of flow.

**Drawdown:** Vertical distance that a water elevation is lowered or the pressure head is reduced due to the removal of water from the same system.

**Drill Pad:** An earthen platform/bench created to provide stable support for a drill rig during drilling activities.

**Effects** include:

- (a) Direct effects, which are caused by the action and occur at the same time and place.
- (b) Indirect effects, which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems.

Effects and impacts as used in these regulations are synonymous. Effects includes ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historic, cultural, economic, social, or health, whether direct, indirect, or cumulative. Effects may also include those resulting from actions which may have both beneficial and detrimental effects, even if on balance the agency believes that the effect will be beneficial.

**Environmental Document:** Includes the documents specified in the National Environmental Policy Act, Sec. 1508.9 (environmental assessment), Sec. 1508.11 (environmental impact statement), Sec. 1508.13 (finding of no significant impact), and Sec. 1508.22 (notice of intent).

“Environmental impact statement” means a detailed written statement as required by section 102(2)(C) of the Act.



**Ephemeral Drainage:** A channel or drainage that flows only in direct response to precipitation or snow melt. Such flow is usually of short duration.

**Erosion:** The wearing away of the land surface by running water, wind, ice or other geologic agents, including such processes as gravitation creep.

**Exploration:** The search for economic deposits of minerals, ore, gas, oil, or coal through the practices of geology, geochemistry, geophysics, drilling, shaft sinking and/or mapping.

**Extraction:** The process of mining and removal of coal or ore from a mine. Also used in relation to all process of obtaining metals from ores.

**Feasible:** Capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, legal, social, and technological factors.

**Federal Agency:** All agencies of the Federal Government. It does not mean the Congress, the Judiciary, or the President, including the performance of staff functions for the President in his Executive Office. For the purposes of regulation it includes States and units of general local government and Indian tribes assuming NEPA responsibilities under section 104(h) of the Housing and Community Development Act of 1974.

**Forage:** All browse and non-woody plants that are available to livestock or game animals for grazing or harvestable for feed.

**Fugitive Dust:** Dust particles suspended randomly in the air from road travel, excavation and rock loading operations.

**Geochemistry:** The study of the distribution and amounts of the chemical elements in minerals, ores, rocks, soils, water, and the atmosphere, and their circulation in nature, on the basis of the properties of their atoms and ions. The geology in chemistry concerned with the chemical composition of, an chemical reactions taking place within, the earth's crust.

**Geotechnical:** A branch of engineering that is essentially concerns with the engineering design aspects of slope stability, settlement, earth pressures, bearing capacity, seepage control, and erosion.

**Groundwater:** Water found beneath the land surface in the zone of saturation below the water table.

**Growth Media:** All materials, including topsoil, specified soil horizons, vegetative debris, and organic matter, which are classified as suitable for stockpiling and/or reclamation.

**Haul Road:** A road used by large (<50 ton capacity) trucks to haul ore and waste rock from an open pit mine to other locations.

**Heap Leaching:** An ore extraction method used for low to moderate grade ores, which involves placing the ore in a mound and then "leaching" by percolation of a solution which dissolves target metals from the rock.

**Heavy Metals:** A group of elements, usually acquired by organisms in trace amounts, that are often toxic in higher concentrations; includes lead, mercury, molybdenum, nickel, copper, cobalt,



chromium, iron, silver, etc.

**HDPE (High Density Polyethylene):** A plastic impermeable material used for liners. This material deforms with a low probability of puncturing or splitting. Seams are heat welded instead of glued, thus preventing rupture.

**Human Environment:** Shall be interpreted comprehensively to include the natural and physical environment and the relationship of people with that environment. (See the definition of “effects” (Sec. 1508.8).) This means that economic or social effects are not intended by themselves to require preparation of an environmental impact statement. When an environmental impact statement is prepared and economic or social and natural or physical environmental effects are interrelated, then the environmental impact statement will discuss all of these effects on the human environment.

**Hydrographic Basin:** An extent or an area of land where surface water from rain and melting snow or ice converges to a single point, in the basin, where the waters join another waterbody, such as a river, lake, reservoir, estuary, wetland, sea, or ocean.

**Hydraulic Conductivity:** A measure of the ability of material to permit the flow of water under a gradient; permeability.

**Irreversible and Irretrievable Commitments of Resources:** Irreversible commitments of resources occurs when, once committed to the proposed project components, the resource would continue to be committed throughout the life of the proposed project. An irretrievable commitment of the resources refers to those resources that, once used, consumed, destroyed or degraded during construction, operations, or decommissioning of the proposed project components, would cause the resource to be unavailable for use by future generations.

**Key Observation Point (KOP):** A specific place on a travel route or within an existing or potential use area where the view of a management activity or project would be most revealing for purposes of the contrast rating.

**L<sub>50</sub>, L<sub>90</sub>:** The n-percent exceeded level, L<sub>n</sub>, is the sound pressure level exceeded for n percent of the time. In other words, for n percent of the time, the fluctuating sound pressure levels are higher than the L<sub>n</sub> level. L<sub>n</sub> can be obtained by analyzing a given noise by statistical means. L<sub>50</sub> is the noise level exceeded for 50% of the time. It is statistically the mid-point of the noise readings. It represents the median of the fluctuating noise levels. L<sub>90</sub> is the level exceeded for 90% of the time. For 90% of the time, the noise level is above this level. It is generally considered to be representing the background or ambient level of a noise environment. (from: [http://www.epd.gov.hk/epd/noise\\_education/web/ENG\\_EPd\\_HTML/m2/types\\_3.html](http://www.epd.gov.hk/epd/noise_education/web/ENG_EPd_HTML/m2/types_3.html))

**Lead Agency:** The agency or agencies preparing or having taken primary responsibility for preparing the environmental impact statement.

**Leaching:** The process of applying a chemical agent that bonds preferentially and dissolves into solution the target metal (s) in an ore. The metal complexes or binds to the solution, which is then called a “pregnant” solution. The pregnant solution is collected for processing to recover the metals.

**Locatable Minerals:** Generally refers to hardrock minerals on Public Domain lands or National Forest System lands reserved from the Public Domain that are mined and processed to recover



metals, such as gold and copper, chemical grade limestone, and asbestos.

**Major Federal Action:** Includes actions with effects that may be major and which are potentially subject to Federal control and responsibility. Major reinforces but does not have a meaning independent of significantly (Sec. 1508.27). Actions include the circumstance where the responsible officials fail to act and that failure to act is reviewable by courts or administrative tribunals under the Administrative Procedure Act or other applicable law as agency action.

(a) Actions include new and continuing activities, including projects and programs entirely or partly financed, assisted, conducted, regulated, or approved by federal agencies; new or revised agency rules, regulations, plans, policies, or procedures; and legislative proposals (Secs. 1506.8, 1508.17). Actions do not include funding assistance solely in the form of general revenue sharing funds, distributed under the State and Local Fiscal Assistance Act of 1972, 31 U.S.C. 1221 et seq., with no Federal agency control over the subsequent use of such funds. Actions do not include bringing judicial or administrative civil or criminal enforcement actions.

(b) Federal actions tend to fall within one of the following categories:

Adoption of official policy, such as rules, regulations, and interpretations adopted pursuant to the Administrative Procedure Act, 5 U.S.C. 551 et seq.; treaties and international conventions or agreements; formal documents establishing an agency's policies which will result in or substantially alter agency programs.

Adoption of formal plans, such as official documents prepared or approved by federal agencies which guide or prescribe alternative uses of Federal resources, upon which future agency actions will be based.

Adoption of programs, such as a group of concerted actions to implement a specific policy or plan; systematic and connected agency decisions allocating agency resources to implement a specific statutory program or executive directive.

Approval of specific projects, such as construction or management activities located in a defined geographic area. Projects include actions approved by permit or other regulatory decision as well as federal and federally assisted activities.

**Milling:** The general process of treating or to separate and concentrate the valuable metal(s) or mineral(s) from the rest of the ore material.

**Mine Pit:** Surface area from which ore and waste rock are removed.

**Mineral Entry:** The filing of a mining claim upon Public Domain or related land to obtain the right to any minerals it may contain. Valid mining claims may be purchased in full (patented) under the 1872 mining law, as amended.

**Mining Claim:** A portion of the Public Domain or related lands which a miner, for mining purposes, takes and holds in accordance with mining laws.

**Mitigation** includes:

(a) Avoiding the impact altogether by not taking a certain action or parts of an action.



- (b) Minimizing impacts by limiting the degree or magnitude of the action and its implementation.
- (c) Rectifying the impact by repairing, rehabilitating, or restoring the affected environment.
- (d) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action.
- (e) Compensating for the impact by replacing or providing substitute resources or environments.

**NEPA Process:** All measures necessary for compliance with the requirements of section 2 and Title I of the National Environmental Policy Act (NEPA).

**Notice of Intent:** A notice that an environmental impact statement will be prepared and considered. The notice shall briefly:

- (a) Describe the proposed action and possible alternatives.
- (b) Describe the agency's proposed scoping process including whether, when, and where any scoping meeting will be held.
- (c) State the name and address of a person within the agency who can answer questions about the proposed action and the environmental impact statement.

“Proposal” exists at that stage in the development of an action when an agency subject to the Act has a goal and is actively preparing to make a decision on one or more alternative means of accomplishing that goal and the effects can be meaningfully evaluated. Preparation of an environmental impact statement on a proposal should be timed (Sec. 1502.5) so that the final statement may be completed in time for the statement to be included in any recommendation or report on the proposal. A proposal may exist in fact as well as by agency declaration that one exists.

**Open Pit Mining:** A type of mining that involves excavation of ore by digging downward from the ground surface, removing the overburden and extracting the ore beneath. The result of the mining operation is an “open pit.”

**Ore:** An earth material containing target metal(s) or mineral(s) in sufficient concentration and quantity which may be mined and processed at an economic profit.

**Patented Claims:** Private land which has been secured from the U.S. Government by compliance with the laws relating to such lands.

**Permeability:** see hydraulic conductivity.

**pH:** Symbol for the negative common logarithm of the hydrogen ion concentration (acidity) of a solution. The pH value of 7 is considered neutral. A pH value below 7 indicates acidity, and a pH value above 7 indicates alkalinity or a base.

**Plan of Operations (Plan or PoO):** A detailed description presenting the methods, timing, and contingencies to be used during the operation of the Project. A document required from any person proposing to conduct mineral related activities which utilize earth moving equipment and which will cause disturbance to surface resources.



**Precious Metal:** Any of the less common and highly valuable metals; gold, silver, platinum.

**Pregnant Solution:** The resulting metal-laden solution collected from the leaching of ore which contains dissolved metal values. The precious metals values are recovered from this pregnant solution, which then becomes the barren solution that is typically refortified with necessary reagents and reintroduced into the leaching circuit.

**Pure Live Seed:** The percentage of seed (i.e. good viable seed) that has the potential to germinate within a measured one pound weight of any seed lot (USDA 2009).

**Reclamation:** Returning disturbed land to a form and productivity in conformity with a predetermined land management plan or a government approved plan or permit.

**Record of Decision:** A document separate from but associated with an Environmental Impact Statement which states the decision; identifies all alternatives, specifying which were environmentally preferable; and states whether all practicable means to avoid environmental harm from the alternative have been adopted, and if not, why not (40 CFR 1505.2).

**Relationships Between Short-Term Use and Long-Term Productivity:** Those relationships which tie short-term use to the long-term condition and viability of a given resource value (an example would be the long-term effects of overgrazing on range productivity and condition).

**Riparian:** Pertaining to or situated on the bank of a body of water, especially of a watercourse such as a river.

**Scope:** Consists of the range of actions, alternatives, and impacts to be considered in an environmental impact statement. The scope of an individual statement may depend on its relationships to other statements (Secs.1502.20 and 1508.28). To determine the scope of environmental impact statements, agencies shall consider three types of actions, three types of alternatives, and three types of impacts. They include:

(a) Actions (other than unconnected single actions) which may be:

Connected actions, which means that they are closely related and therefore should be discussed in the same impact statement. Actions are connected if they:

- (i) Automatically trigger other actions which may require environmental impact statements.
- (ii) Cannot or will not proceed unless other actions are taken previously or simultaneously.
- (iii) Are interdependent parts of a larger action and depend on the larger action for their justification.

Cumulative actions, which when viewed with other proposed actions have cumulatively significant impacts and should therefore be discussed in the same impact statement.

Similar actions, which when viewed with other reasonably foreseeable or proposed agency actions, have similarities that provide a basis for evaluating their environmental consequences together, such as common timing or geography. An agency may wish to analyze these actions in the same impact statement. It should do so when the best way to assess adequately the combined impacts of similar actions or reasonable alternatives to such actions is to treat them in



a single impact statement.

(b) Alternatives, which include:

No action alternative.

Other reasonable courses of actions.

Mitigation measures (not in the proposed action).

(c) Impacts, which may be: (1) Direct; (2) indirect; (3) cumulative.

**Significantly:** As used in NEPA requires considerations of both context and intensity:

(a) Context. This means that the significance of an action must be analyzed in several contexts such as society as a whole (human, national), the affected region, the affected interests, and the locality. Significance varies with the setting of the proposed action. For instance, in the case of a site-specific action, significance would usually depend upon the effects in the locale rather than in the world as a whole. Both short- and long-term effects are relevant.

(b) Intensity. This refers to the severity of impact. Responsible officials must bear in mind that more than one agency may make decisions about partial aspects of a major action. The following should be considered in evaluating intensity:

1) Impacts that may be both beneficial and adverse. A significant effect may exist even if the Federal agency believes that on balance the effect will be beneficial.

2) The degree to which the proposed action affects public health or safety.

3) Unique characteristics of the geographic area such as proximity to historic or cultural resources, park lands, prime farmlands, wetlands, wild and scenic rivers, or ecologically critical areas.

4) The degree to which the effects on the quality of the human environment are likely to be controversial.

5) The degree to which the possible effects on the human environment are highly uncertain or involve unique or unknown risks.

6) The degree to which the action may establish a precedent for future actions with significant effects or represents a decision in principle about a future consideration.

7) Whether the action is related to other actions with individually insignificant but cumulatively significant impacts. Significance exists if it is reasonable to anticipate a cumulatively significant impact on the environment. Significance cannot be avoided by terming an action temporary or by breaking it down into small component parts.

8) The degree to which the action may adversely affect districts, sites, highways, structures, or objects listed in or eligible for listing in the National Register of Historic Places or may cause loss or destruction of significant scientific, cultural, or historical resources.



9) The degree to which the action may adversely affect an endangered or threatened species or its habitat that has been determined to be critical under the Endangered Species Act of 1973.

10) Whether the action threatens a violation of Federal, State, or local law or requirements imposed for the protection of the environment.

**Silicification:** The introduction of, or replacement by, silica, generally resulting in the formation of fine-grained quartz, chalcedony, or opal, which may fill pores and replace existing minerals.

**Stockpile:** An accumulation of ore, stone, or other mined or quarried material.

**Surface Water:** Water found in ponds, lakes, inland seas, streams, and rivers or above the ground surface.

**Tailings:** Crushed ore that has been washed or treated and is regarded as too poor to be treated further

**Tailings Storage Facility (TSF):** A reservoir controlled by one or more embankments to store mine tailings and mine process water.

**Third-Party Contractor:** An independent firm contracted by a government agency to perform work related to a proposed action or another organization; due to the financial and contractual arrangements governing such relationships, the third-party contractor has no financial or other interest in the decision to be reached on the project.

**Undesignated Basin:** Groundwater basin where permitted groundwater rights are less than the estimated average annual recharge.

**Upgradient:** In relation to any fixed point with regard to the direction of drainage or flow, upgradient is at a higher point of elevation than the chosen observation point and thus upward in relation to the direction of flow.

**Waste Rock:** A non-ore rock that is removed to access the ore zone. It contains target metal(s) or mineral(s) below the economic cutoff level, and must be removed to gain access to the ore zone.

**Waste Rock Disposal Area (WRDA):** also called waste rock storage facility or stockpile area; an area where waste rock (loose or consolidated rock material that overlies a mineral deposit) is placed during mining either temporarily or permanently.

**Watershed:** The entire land area that contributes water to a particular drainage system or stream.

**Wilderness:** Wilderness is designated by Congress under the authority of the Wilderness Act of 1964 and comprise the National Wilderness Preservation System.



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# Programmatic Agreement

Between

The Bureau of Land Management, Egan Field Office

and

The Nevada State Historic Preservation Officer

Regarding the Midway Gold US Inc. Gold Rock Project

## Appendix 1A

Programmatic Agreement  
Between the Bureau of Land  
Management, Egan Field Office  
and the Nevada State Historic  
Preservation Officer Regarding the  
Midway Gold US Inc. Gold Rock  
Project







Programmatic Agreement  
Between  
The Bureau of Land Management, Egan Field Office  
And  
The Nevada State Historic Preservation Officer  
Regarding the Midway Gold US Inc. Gold Rock Project

**WHEREAS**, Midway Gold US Inc. (Midway) intends to seek authorization from Bureau of Land Management Egan Field Office (BLM) for mining operations at the Gold Rock Project in White Pine County, Nevada; and

**WHEREAS**, the BLM has determined that the authorization of mining operations at the Gold Rock Project may have the potential to affect historic properties eligible for inclusion in the National Register of Historic Places (NRHP), and has consulted with the Nevada State Historic Preservation Officer (SHPO) pursuant to Section 106 of the National Historic Preservation Act of 1966, as amended (NHPA); and

**WHEREAS**, effects to historic properties (as that term is defined in 36 C.F.R. § 800.16(l) (1)) in the Area of Potential Effect (APE) (Appendix A) cannot be fully determined and the signatories desire to enter into this Programmatic Agreement (PA) to set forth procedures to be followed in satisfaction of BLM's Section 106 responsibilities of the NHPA, for the Gold Rock Project in the APE; and

**WHEREAS**, BLM has consulted with Midway regarding the effects of the undertaking on historic properties and has invited Midway to be a concurring party to this PA; and

**WHEREAS**, BLM has consulted with the Advisory Council on Historic Preservation (ACHP) pursuant to 36 C.F.R. § 800.14(b) to develop and execute this PA and the ACHP has elected not to formally enter consultation on the development of this PA; and

**WHEREAS**, the Duckwater Shoshone Tribe and Te-Moak Tribe of Western Shoshone have been identified as Indian Tribes (Tribes) that may attach religious and cultural significance to historic properties within the APE and the Tribes have been contacted and offered an opportunity to participate as concurring parties to this PA; and

**WHEREAS**, White Pine and Nye Counties (Counties) operate and maintain a county road in the Gold Rock project area that Midway proposes to modify, and the BLM is consulting with the Counties and has invited them to be concurring parties to this PA with respect to this issue;

**WHEREAS**, BLM has consulted with Mt. Wheeler Power which is responsible for construction of a transmission line to the Gold Rock Project on lands managed by the BLM, and the BLM has invited Mt. Wheeler Power to be a concurring party to this agreement; and



**WHEREAS**, BLM and the SHPO are referred to as the Signatory Parties to this PA; and

**WHEREAS**, the BLM will notify the public of the Gold Rock Project and will provide members of the public with an opportunity to express their views on the development of the PA and the Section 106 process pursuant to 36 C.F.R. § 800.6(a)(4) and 36 C.F.R. § 800.14(b)(2)(ii) during and concurrent with the public comment process for the draft environmental impact statement (DEIS) for the Gold Rock Project. A copy of the PA will be made available to the public at the Egan Field Office and copies provided to all consulting parties. During this notification period, certain individuals and/or organizations with a demonstrated interest in the APE, may participate as consulting parties; and

**WHEREAS**, BLM has a Nationwide Programmatic Agreement (2012) and a State Protocol Agreement (Protocol) between BLM and the SHPO (2012), that govern all other undertakings and historic properties that may occur within the APE and those agreements are hereby incorporated by reference into this PA; and

**WHEREAS**, the definitions given in the Protocol apply throughout this PA, unless specifically modified below; and

**WHEREAS**, this PA covers all aspects of authorized mining operations for the Gold Rock Project; and

**NOW, THEREFORE**, the Signatory Parties agree that the Gold Rock Project shall be administered in accordance with the following stipulations to ensure that historic properties will be treated to avoid or mitigate effects to the extent practicable, regardless of surface ownership, and to satisfy BLM's Section 106 responsibilities for all aspects of the Gold Rock Project.

## **I. ROLES AND RESPONSIBILITIES**

- A. BLM is responsible for administering this PA and will ensure that all of its stipulations are carried out. This includes but is not limited to ensuring that all parties carry out their responsibilities; overseeing all cultural resources work; and assembling all submissions to the SHPO and consulting parties during the implementation of this PA. The Egan Field Manager is the BLM Authorized Officer for the Gold Rock Project. The Authorized Officer, or their designee, is the Gold Rock Project point of contact for BLM.
- B. Midway's designee, its Vice President of Environmental Affairs or his designee, will be the responsible point of contact for the Gold Rock Project and provide BLM with any and all information needed to implement this PA and in Midway's possession or reasonably available to Midway.
- C. Midway shall bear the expense of identification, evaluation, and treatment of all historic properties directly or indirectly affected by Gold Rock Project activity. Such



costs shall include, but not be limited to, pre-field planning, fieldwork, post-fieldwork analysis, research and report preparation, interim and summary report preparation, publications for the general public, and the cost of curating project documentation and artifact collections. If Midway withdraws project applications, then Midway shall incur no further expense except for completing fieldwork and post-fieldwork activities (production of final inventory, testing and data recovery reports covering the description and analysis of data, and the curation of materials) that has occurred as of the date of withdrawal.

- D. BLM will be responsible for all submissions to SHPO, Tribes, and other consulting parties identified during the implementation of this PA for the Gold Rock Project. Any submission to SHPO or interested parties not from BLM will be considered as informational only and will not trigger any compliance timelines or other actions.
- E. BLM shall ensure that ethnographic, historic, architectural and archaeological work conducted pursuant to this PA is carried out by or under the direct supervision of persons meeting qualifications set forth in the draft Secretary of the Interior's Professional Qualification Standards dated June 20, 1997 (62 FR 33707-33723) and who have been permitted for such work on public lands by BLM.
- F. Midway, in cooperation with Signatory Parties, shall provide in-house training to ensure that all its personnel and all the personnel of its contractors and subcontractors are directed not to engage in the illegal collection of historic and prehistoric materials. Subsequent hires will also be required to be subject to similar training. Training can be in association with Midway's safety and or related job training and project orientation. Midway shall cooperate with BLM to ensure compliance with the Archaeological Resources Protection Act of 1979 (16 U.S.C. 470) on Federal lands and with Nevada Revised Statutes (NRS) 381 and 383 for all other lands as applicable.
- G. Midway will be responsible for costs of rehabilitation or mitigation required as a result of Gold Rock project activities, and may be subject to penalties under applicable federal, state or local law, should damage to cultural resources inside or outside the APE occur during the period of construction, mine operation or reclamation due to the unauthorized or negligent actions of Midway, their employees, contractors or any other project personnel operating under Midway's supervision, direction, or control.
- H. If the Gold Rock Project is sold or otherwise transferred to another proponent other than Midway, the Signatory Parties will determine within 90 days of the sale or transfer if the PA will remain in effect, be amended per Stipulation XIII, or be terminated per Stipulation XIV. All provisions of the PA will remain in effect until such a determination is made.



## II. IDENTIFICATION OF HISTORIC PROPERTIES

- A. BLM shall identify interested persons through the NEPA process and involve interested parties, as appropriate, in all activities carried out under this PA associated with the undertaking.
- B. Midway, through its consulting archaeologist, shall ensure that cultural resources inventories will be conducted on all lands identified within the approved Gold Rock Project APE (Appendix A) for direct effects in accordance with the Protocol.
- C. The APE for assessing indirect effects (visual, audible, and atmospheric) will be the direct disturbance area plus one mile outward in all directions from the perimeter of the APE. The indirect APE may extend beyond the one-mile convention to encompass properties that have traditional religious and cultural importance to Indian tribes or other geographically extensive historic properties such as trails or roads, when effects have been determined to extend beyond this distance. The assessment of visual effects will incorporate a Geographic Information System (GIS) viewshed assessment as well as BLM Visual Resource Management (VRM) concepts. Midway through its consulting archaeologist will obtain data from methods outlined in Stipulation II E, to identify historic properties outside of the direct APE that would be adversely affected by visual impacts from the Gold Rock Project. The BLM will consult with Indian tribes to identify any properties of traditional religious and cultural importance that might be affected by the implementation of the Gold Rock Project and its associated transmission line.
- D. Any amendments on the Gold Rock Project and future exploration outside the Gold Rock Project APE will be surveyed following BLM Class III Standards to identify historic properties.
- E. BLM shall have the consulting archaeologist conduct records searches of General Land Office (GLO) plat maps, BLM's Master Title Plats/Historic Index, the GLO Land Records website (<http://www.glorerecords.BLMNWFO.gov/>); the Nevada State Lands Patent Database Query (<http://www.lands.nv.gov/patents/patents.htm>); the Nevada Cultural Resources Information System (NVCRIS), the National and State Registers of Historic Places, National Trail System, historic maps, BLM and SHPO cultural resources records, and pertinent historic records/publications and maps to identify historic resources within the APE. The above list is not exclusive and should include other sources if identified by any Signatory Party.
- F. The required identification activities shall be completed by Midway's consulting archaeologist or other qualified individuals as necessary. After all reasonable efforts have been made, if access cannot be obtained to private land and after consulting with BLM, Midway through its consulting archaeologist shall use existing data to determine the types of resources that might be present and anticipated effects. Upon BLM



determination that the intention of this section has been satisfied, the BLM Authorized Officer may issue a Notice to Proceed (NTP) for any construction segment as prescribed in Stipulation VII.

### III. ELIGIBILITY

- A. BLM, in consultation with SHPO and other consulting parties as necessary, shall evaluate all cultural resources recorded under this PA for eligibility to the NRHP based on an existing approved historic context or one that will be prepared.
- B. BLM shall consult with the appropriate Tribes to evaluate the eligibility of properties of traditional religious and cultural importance within the APE.
- C. A separate report will be prepared to document historic properties with standing architectural resources in order to expedite SHPO review.
- D. To the extent practicable, NRHP eligibility determinations shall be based on documented inventory information and information provided by Tribes and other consulting parties. If the information gathered in the inventory, or in interviews with Tribes and other consulting parties, is inadequate to determine NRHP eligibility, Midway, through its consulting archaeologist, may be required to conduct limited subsurface testing or other evaluative techniques to determine eligibility. Subject to approval by BLM, in consultation with SHPO, evaluative testing for archaeological resources is intended to provide the minimum data necessary to define the nature, age, and distribution of materials in potential historic properties, to make final evaluations of eligibility, and to inform the development of a treatment plan should data recovery be deemed necessary. BLM requires Midway's consulting archaeologist be approved for a testing Cultural Resource Use Permit (CRUP) prior to subsurface probing, testing, data recovery or surface material collection.
- E. If any of the Signatory Parties, Tribes, or consulting parties disagree regarding the eligibility of a cultural resource, the Signatory Parties shall work together with Tribes or consulting parties, when appropriate, to seek a resolution on the determination of eligibility. If the dispute cannot be resolved, BLM shall seek a formal determination of eligibility from the Keeper of the National Register in accordance with 36 C.F.R. § 63.2. The Keeper's determination will be considered final.
- F. BLM shall determine, in consultation with Tribes or other consulting parties as necessary, the NRHP eligibility of all cultural resources that will be affected by Gold Rock Project activities prior to initiation. BLM will determine NRHP eligibility in a manner consistent with the Protocol. Cultural resources may remain unevaluated for the NRHP only with the approval by BLM in consultation with SHPO.



#### IV. TREATMENT

- A. BLM shall ensure that Midway avoids adverse effects to historic properties, whenever reasonably practical, through project design, or redesign, relocation of facilities, or by other means in a manner consistent with the Protocol.
- B. When avoidance is not practical and data recovery is proposed to lessen or mitigate project related adverse effects to historic properties eligible under criterion D, BLM, in consultation with the SHPO, shall ensure that Midway, through its consulting archaeologist, develops a Historic Properties Treatment Plan (Treatment Plan) that is consistent with the Secretary of the Interior's Standards and Guidelines for Archaeology and Historic Preservation (48 FR 44716-37), *Treatment of Historic Properties: A Handbook* (Advisory Council on Historic Preservation 1980) and the ACHP's Recommended Approach for Consultation on the Recovery of Significant Information from Archaeological Sites dated June 17, 1999. The required mitigation activities shall be completed regardless of land ownership. BLM may but shall not be obligated to concurrently submit this document to other consulting parties, as BLM deems appropriate. These consulting parties shall have fifteen (15) days from their receipt to review the document. BLM will forward all comments received by consulting parties to the SHPO.
- C. For properties eligible under criteria A through C, as defined in National Park Service Bulletin #36, mitigation other than data recovery may be considered (e.g., oral history, historic markers, exhibits, interpretive brochures or publications, etc.). When appropriate, the Treatment Plan shall include provisions (content and number of copies) for a publication for the general public.
- D. BLM shall ensure that all records and materials resulting from identification and treatment efforts are curated in accordance with 36 C.F.R. § 79 in an approved curation facility in Nevada. As defined in the Native American Graves Protection and Repatriation Act (NAGPRA) materials will be handled in accordance with 43 C.F.R. § 10. All materials collected will be maintained in accordance with 36 C.F.R. § 79 or 43 C.F.R. § 10, until the final treatment report is complete and collections are curated and/or returned to their owners. Midway, or their contractor, shall provide proof of a current curation agreement to BLM within two (2) weeks of BLM acceptance of the final reports.
- E. BLM shall ensure that all final archaeological reports resulting from actions pursuant to this PA will be provided to SHPO and Tribes or other interested persons as appropriate. All such reports shall be consistent with contemporary professional standards and the Secretary of Interior's Formal Standards for Final Reports of Data Recovery Programs (48 FR 447716-44740). Final reports will be submitted in both paper and electronic copies and will include digital copies of all associated data (e.g., GPS files, GIS data layers, digital photographs, etc.).



**V. OTHER CONSIDERATIONS**

- A. Identification, evaluation, and treatment efforts may extend beyond the geographic limits of the APE when the resources being considered extend beyond the boundary of the construction activities. No identification, evaluation, or treatment efforts will occur beyond that necessary to complete the Section 106 process as agreed to in this PA.
- B. Information on the location and nature of all cultural resources or information considered proprietary by a Tribe will be held confidential by the BLM to the extent provided by Federal and state law. BLM will not disseminate this information beyond what is required to complete the Section 106 process as agreed to in this PA.

**VI. MONITORING**

- A. Any Signatory Party may monitor actions carried out pursuant to this PA. To the extent practicable, every effort will be made to minimize the number of monitors involved in the undertaking.
- B. Any areas that BLM, in consultation with the SHPO, identifies as sensitive will be monitored during construction related activities by a qualified individual (Monitor). Monitors shall be empowered to stop work to protect resources if that work is inconsistent with the terms of this PA or any corresponding treatment or monitoring plan.

**VII. NOTICES TO PROCEED (NTP)**

BLM may issue a NTP to Midway for individual construction segments as defined by Midway in their Gold Rock Project plans, under any of the following conditions:

- A. BLM, in consultation with SHPO, has determined that there are no cultural resources within the APE for that construction segment; or
- B. BLM, in consultation with SHPO, has determined that there are no historic properties within the APE for the construction segment; or
- C. BLM, after consultation with the SHPO and other consulting parties, has implemented an adequate Treatment Plan for the properties affected by the construction segment; and
  - 1. Midway has posted a surety as set forth in Stipulation IX; and
  - 2. The fieldwork phase of the treatment option has been completed; and



3. BLM has accepted a summary description of the fieldwork performed and a reporting schedule for that work; and
  4. BLM shall provide an electronic copy of the summary to SHPO; and
  5. SHPO will review the summary and if the SHPO concurs or does not respond within two working days of receipt, BLM shall assume concurrence and issue the NTP.
- D. Midway shall not begin any ground disturbing activities within the boundary of any historic property until a NTP is issued for the property or construction segment encompassing that property.

#### **VIII. TIME FRAMES**

- A. BLM will review and comment on any document submitted by Midway, through its consulting archaeologist, within thirty (30) calendar days of receipt.
- B. BLM will submit the results of all identification, evaluation, effects assessments, treatment efforts, including discovery situations, and Treatment or Data Recovery Plans to the SHPO. The SHPO shall have thirty (30) calendar days from their receipt to review and comment on any submission.
- C. A draft final report of all identification, evaluation and treatment activities will be due to BLM from Midway within nine (9) months after the completion of the fieldwork associated with the activity unless otherwise negotiated. Final reports will be due sixty (60) days after receiving BLM comments.

#### **IX. SURETY BONDS**

- A. Based on a written detailed cost estimate submitted by the consulting archaeologist and agreed to by Midway and BLM, Midway will post a surety bond with BLM in an amount sufficient to cover all post-fieldwork costs associated with the inventory; implementing a Treatment Plan, Data Recovery Plan, or other cultural resource management activities. Such costs may include, but are not limited to post-fieldwork analyses, research and report preparation, interim and summary reports preparation, and the curation of project documentation and artifact collections in an approved curation facility. The surety shall be posted prior to BLM issuing any NTP. Additional surety bonds may be required by BLM to cover any of the issues associated with implementation of the PA.
- B. The surety bond posted shall be subject to forfeiture if the post-fieldwork tasks are not completed within the time period established by the treatment option selected. BLM and Midway may agree to extend any such time periods. BLM will notify Midway in



writing that the surety is subject to forfeiture and shall allow Midway thirty (30) calendar days to respond before action is taken to forfeit the surety. If, during those thirty (30) days, Midway takes action to complete the post-fieldwork tasks, no action shall be taken to forfeit the bond.

- C. The surety bond shall be released, in whole or in part, as specific post-fieldwork tasks, including final disposition of all collections, are completed and accepted by BLM.

## **X. POST-REVIEW DISCOVERY SITUATIONS**

Stipulations of this PA and Protocol are intended to identify and mitigate adverse effects to historic properties. Unplanned discoveries of buried cultural resources are not anticipated, however if there is an unplanned discovery, the BLM will ensure that provisions in the Protocol (Section VI.B) and the following stipulations are met.

- A. When previously unidentified cultural resources are discovered or an unanticipated impact situation occurs, all Gold Rock Project related activities within 100 meters of the discovery/impact will cease immediately. Midway, through its consulting archaeologist or its authorized representative, shall secure the location to prevent vandalism or other damage. Midway or its authorized representative shall immediately notify the BLM Authorized Officer of the discovery followed by written confirmation.
- B. BLM will notify SHPO, Tribes, and other consulting parties as appropriate, within one (1) working day of being notified of the discovery or unanticipated impact, and consider their initial comments on the situation. Within two (2) working days after initial discovery, BLM will notify SHPO, Tribes, and other consulting parties as appropriate, of the decision to either allow Gold Rock Project activities to proceed or to require further evaluation and/or mitigation.
- C. If, in consultation with SHPO, Tribes, and other consulting parties, BLM determines that mitigation for discoveries or unanticipated impacts is required, BLM shall solicit comments from SHPO, Tribes, and other consulting parties, as appropriate, to develop mitigating measures. BLM will afford SHPO, Tribes and other consulting parties, as appropriate, two (2) working days of receipt to provide BLM with comments to be considered when BLM decides on the nature and extent of mitigative efforts. Within seven (7) working days of initial SHPO notification, BLM will inform SHPO of the nature of the mitigation required. BLM will ensure that such mitigative actions are implemented before allowing Gold Rock Project activities to resume.
- D. BLM shall ensure that reports of mitigation efforts for discoveries or unanticipated impacts are completed in a timely manner and conform to the Department of Interior's Formal Standards for Final Reports of Data Recovery Program (42 FR 5377-79). Drafts of such reports shall be submitted to the SHPO for a fifteen (15) day review and



comment period. Final reports shall be submitted to the SHPO, Tribes and consulting parties, as appropriate for information purposes.

- E. Any disputes or objections arising during a discovery or unanticipated impact situation will follow the procedures in Stipulation XI.
- F. Gold Rock Project activities in the area of the discovery or unanticipated impact will be halted until Midway is notified by the BLM Authorized Officer in writing that mitigation is complete and/or activities can resume.

## **XI. DISPUTE RESOLUTION**

- A. If any Signatory Party, Tribe, or other consulting party, objects to any activities proposed pursuant to the terms of this PA, BLM shall consult with the objecting party and SHPO to resolve the issue within thirty (30) days of receiving such objection.
- B. A consulting party can request participation by the ACHP should consultation not resolve the issue.
- C. If there is an objection by SHPO to the manner in which the terms of this PA are implemented, SHPO shall notify the Egan Field Manager in writing of the objection. BLM will consult with SHPO to resolve the objection. If BLM determines that the objection cannot be resolved, it shall request consultation by the BLM Nevada State Office to help resolve the objection. The BLM Nevada State Office shall have the authority to make the final decision in such dispute resolution.
- D. For all post-review discovery disputes, the Egan Field Manager shall request consultation by the BLM Nevada State Office to help resolve the objection. The BLM Nevada State Office shall have seven (7) days to provide the Egan Field Manager with comments.
- E. The Signatory Parties shall continue all actions under this PA that are not the subject of the dispute.
- F. Nothing herein shall be construed to provide or create standing of any individuals who otherwise legally lack standing to raise any challenge or trigger dispute resolution.

## **XII. DURATION**

This PA shall become effective on the date of the last Signatory Party's signature below and shall remain in effect for a period of ten years or until terminated as provided in Stipulation XIV. If the project has not been initiated within the ten year period, this PA will automatically terminate.



### XIII. AMENDMENT

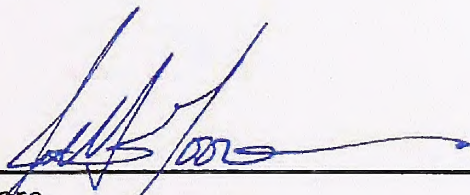
Any Signatory Party to this PA may request that this PA be amended, whereupon the Signatory Parties will consult to consider such amendment. The amendment will be effective on the date a copy signed by all of the Signatory Parties is filed with the ACHP.

### XIV. TERMINATION

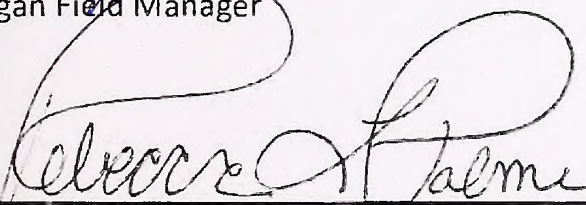
Any Signatory Party may initiate consultation for termination of this PA by providing written notice to the other Signatory Party. After notification by the initiating party, the other Signatory Party shall have thirty (30) calendar days to consult to seek agreement on amendments or any other actions that would address the issues and avoid termination. If such consultation fails, the termination will go into effect at the end of this thirty (30) calendar-day period, unless both parties agree to a longer period. The Signatory Parties shall be required to meet all current or outstanding obligations the Signatory Parties assumed under the terms of the PA. In the event that this PA is terminated, the BLM will comply with the provisions of the current Protocol and applicable NHPA regulations.

**EXECUTION** of this PA and implementation of its terms evidence that the BLM has taken into account the effects of this undertaking on historic properties and afforded the ACHP an opportunity to comment.

### SIGNATORIES:

  
\_\_\_\_\_  
Jill A. Moore  
Egan Field Manager

1/15/14  
\_\_\_\_\_  
Date

  
\_\_\_\_\_  
Rebecca L. Palmer  
Nevada State Historic Preservation Officer

3/17/14  
\_\_\_\_\_  
Date

Concurring Parties:



---

Chairman  
Duckwater Shoshone Tribe

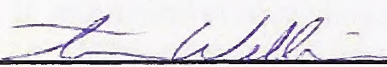
Date

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Chairman  
Te-Moak Tribe of Western Shoshone

Date

---

  
Tom Williams  
Vice President of Environmental Affairs  
Midway Gold US Inc.

6/10/2014

Date

---

Mt. Wheeler Power Company  
Jesse Murdock

Date



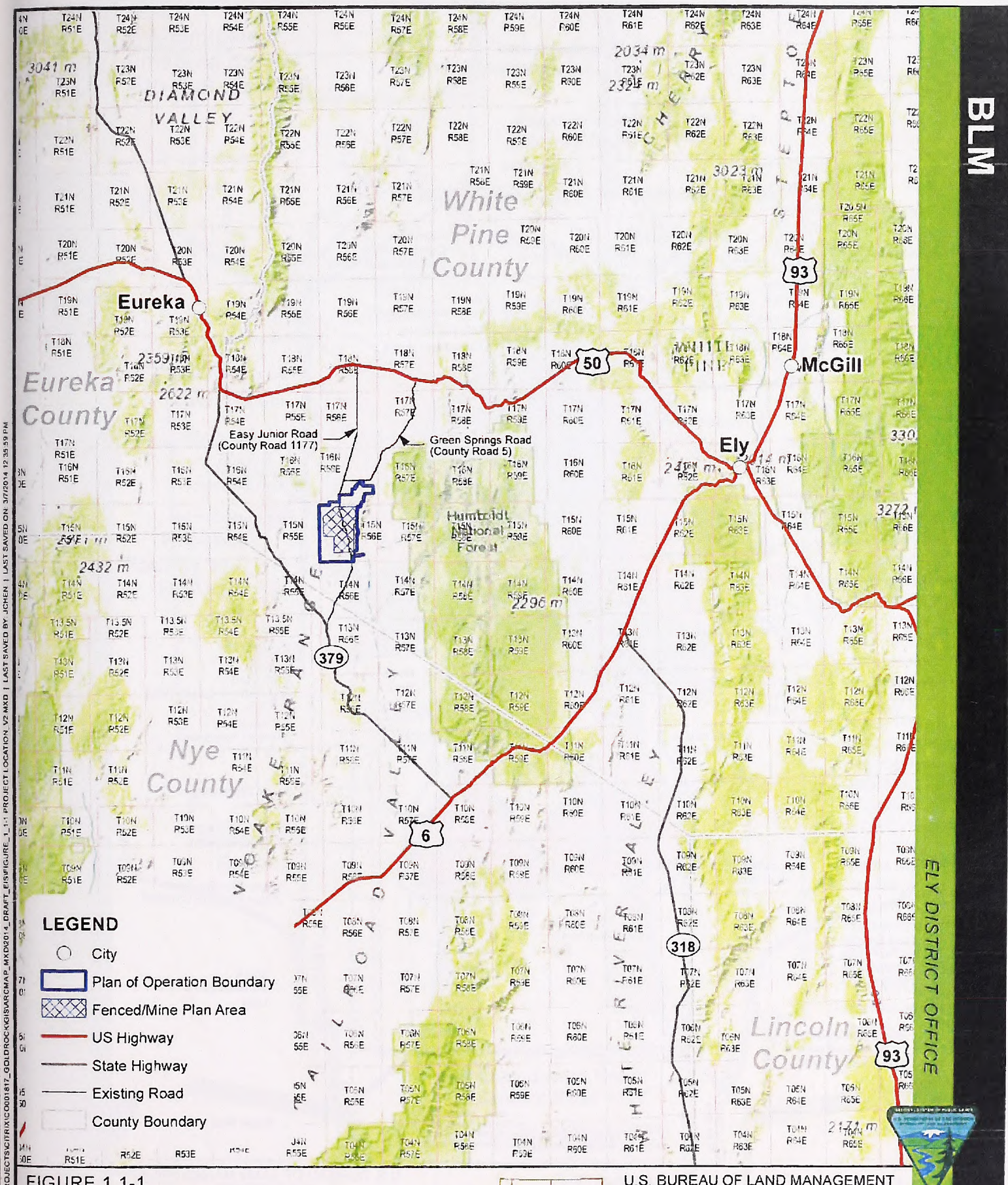
## APPENDIX A

The Gold Rock Project APE is defined as the lands proposed for surface disturbance for mining operations and the construction of a transmission line and is depicted on the four attached maps. The Exploration APE for the Gold Rock Project encompasses a larger geographic area where Midway may conduct mineral exploration to identify additional ore bodies and is illustrated by the Plan of Operation boundary on Map 1.1-1. Midway will submit plans to BLM that will include the location of specific exploration area locations that will initiate the process described in Stipulations II through IV.











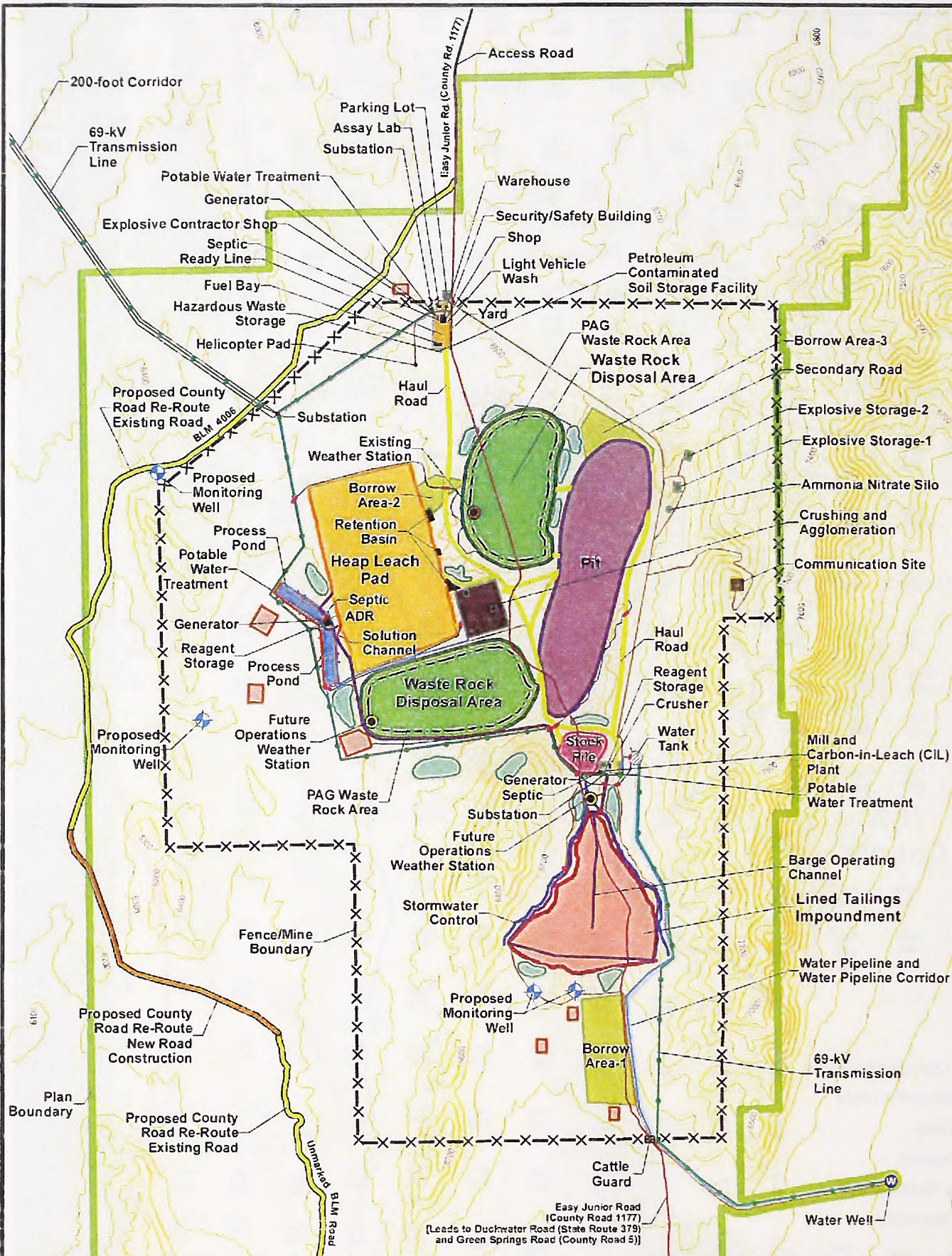


FIGURE 2.3-1  
PROPOSED FACILITIES

MIDWAY GOLD US INC.  
GOLD ROCK MINE PROJECT

MAPPED DATE: 3/7/2014

0 0.5 1  
MILES

LEGEND

- Potentially Acid Generating (PAG) Boundary
- Growth Media Stockpile
- Sediment Basin
- Inter-Facility
- Culvert



U.S. BUREAU OF LAND MANAGEMENT  
ELY DISTRICT  
EGAN FIELD OFFICE

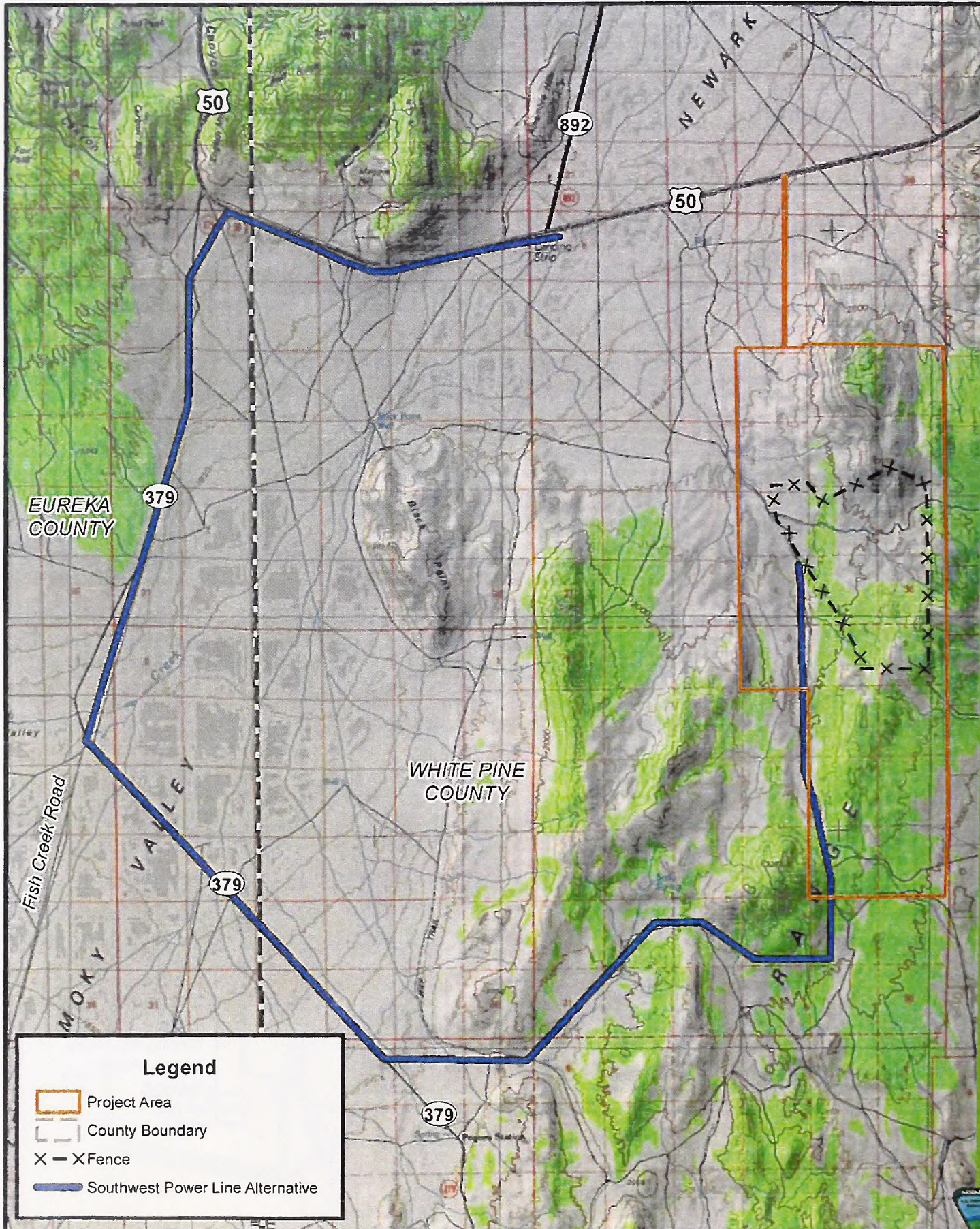
NO WARRANTY IS MADE BY THE BUREAU OF LAND MANAGEMENT AS TO THE ACCURACY, RELIABILITY, OR COMPLETENESS OF THESE DATA FOR INDIVIDUAL USE OR AGGREGATE USE WITH OTHER DATA.

Basemap Contour Interval: 20 feet.









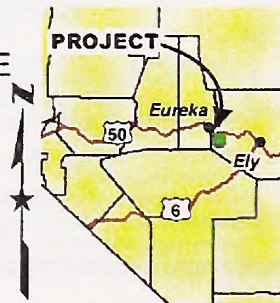
ELY DISTRICT OFFICE

FIGURE 2.4-2  
SOUTHWEST POWER LINE ALTERNATIVE  
MIDWAY GOLD US, INC.  
PAN PROJECT

SCALE: 1 in = 2 miles

DATE DRAWN: JUNE 19, 2013

0 1 2 4 Miles



U.S. BUREAU OF LAND MANAGEMENT  
ELY DISTRICT OFFICE  
EGAN FIELD OFFICE

NO WARRANTY IS MADE BY THE BUREAU OF LAND MANAGEMENT AS TO THE ACCURACY, RELIABILITY, OR COMPLETENESS OF THESE DATA FOR INDIVIDUAL USE OR AGGREGATE USE WITH OTHER DATA.



## BLM Ely District Recommended Bird Nest Buffer Sizes

## BLM Ely District Recommended Bird Nest Buffer Sizes







## BLM Ely District Recommended Bird Nest Buffer Sizes

### Nest Buffer Sizes

The following buffer sizes for nests are recommended by the BLM Ely District. The type of disturbance, current life cycle of the birds (i.e. just started nest construction, incubating, chicks in nest, chicks ready to fledge), and habitat in the area (i.e. riparian area) may warrant adjustments to these recommended buffer sizes. With certain species, an increase in monitoring of the response of the nesting birds and their young to the disturbance may be allowed to reduce buffer sizes. Nests **will not** be marked with bright-colored flagging or anything that could attract predators to the nest. Nests **will not** be checked more than one time per week so as to not alert predators to nest locations.

The following process will be employed once nesting activity has been observed for this project area:

- 1) Activity will cease in the area until the chick(s) fledge, if this is not possible, see number 2 below.
- 2) The buffer specified in the table below will be adhered to until the chick(s) fledge, if this is not possible, see number 3 below.
- 3) The biological monitors will document the following information and submit it to the CICs. The information will then go to the BLM biologists and managers for approval:
  - a) Give a detailed description of the nest, nesting activity, vegetation, pre-existing disturbances to the nest (i.e. proximity to roads, power poles, substations, etc.), monitoring information, and include a photo of the area.
  - b) What action is proposed in an area smaller than the standard buffer? Be sure to include types of equipment, frequency, duration, and number of people.
  - c) Is there a potential for screening the action from the birds, either auditory or visual (i.e. due to terrain, dense vegetation)?

Once the information is received, BLM biologists will make a recommendation to management to either approve or deny the request as presented.



Habitat	Common name	Scientific name	Buffer Size	time from eggs to fledging
sagebrush/salt desert scrub	Greater sage grouse	<i>Centrocercus urophasianus</i>	600 ft	25-27-days (eggs only)
open/grasslands	killdeer	<i>Charadrius vociferous</i>	300 ft	24-26 days (eggs only)
open/grasslands	long-billed curlew	<i>Numenius americanus</i>	300 ft	27-28 days (eggs only)
desert scrub	Gambel's quail	<i>Callipepla gambelii</i>	200 ft	31-34 days (eggs only)
generalist	Mourning dove	<i>Zenaida macroura</i>	200 ft	25-28 days
generalist	White-winged dove	<i>Zenaida asiatica</i>	200 ft	26-30 days
open/grasslands	common nighthawk	<i>Chordeiles minor</i>	300 ft	39 days
woodlands	hummingbirds	<i>Many spp.</i>	200 ft	35-41 days
woodlands/cavity	Lewis's woodpecker	<i>Melanerpes lewis</i>	100 ft	43-45 days
woodlands/cavity	red-naped sapsucker	<i>Sphyrapicus nuchalis</i>	100 ft	39-40 days
woodlands/cavity	Williamson's sapsucker	<i>Sphyrapicus thyroideus</i>	100 ft	44 days
woodlands/cavity	hairy woodpecker	<i>Picoides villosus</i>	100 ft	39-45 days
woodlands/cavity	Ladder-backed woodpecker	<i>Picoides scalaris</i>	100 ft	34-39 days
woodlands/cavity	northern flicker	<i>Colaptes arcticus</i>	100 ft	28-31 days
P/I or sagebrush	gray flycatcher	<i>Empidonax wrightii</i>	200 ft	30 days
cliffs	black phoebe	<i>Sayornis nigricans</i>	200 ft	32-39 days
cliffs	Say's phoebe	<i>Sayornis saya</i>	200 ft	26-30 days
woodlands	vermillion flycatcher	<i>Pyrocephalus rubinus</i>	200 ft	28-31 days
open/trees	western kingbird	<i>Tyrannus verticalis</i>	200 ft	28-31 days
open/cavity/trees	Ash-throated flycatcher	<i>Myiarchus cinerascens</i>	100 ft	31-32 days
tree/scrub	Phainopepla	<i>Phainopepla nitens</i>	200 ft	32-34 days
cliff/tree/cavity	Violet-green swallow	<i>Tachycineta thalassina</i>	100 ft	33-40 days
tree/cavity	Tree swallow	<i>Tachycineta bicolor</i>	100 ft	29-40 days
burrows	Northern rough-winged swallow	<i>Stelgidopteryx serripennis</i>	100 ft	32-37 days
woodlands	Blue-gray gnatcatcher	<i>Poliptila caerulea</i>	200 ft	27-28 days
woodlands	Black-tailed gnatcatcher	<i>Poliptila melanura</i>	200 ft	23-29 days



Habitat	Common name	Scientific name	Buffer Size	time from eggs to fledging
woodlands/yucca	Scott's oriole	<i>Icterus parisorum</i>	200 ft	28 days
open woodlands	Bullock's oriole	<i>Icterus bullockii</i>	200 ft	28 days
open/scrub	horned lark	<i>Eremophila alpestris</i>	300 ft	22-31 days
woodlands	western scrub-jay	<i>Aphelocoma californica</i>	200 ft	33-35 days
woodlands	pinyon jay	<i>Gymnorhinus cyanocephalus</i>	200 ft	38 days
woodlands	Clark's nutcracker	<i>Nucifraga columbiana</i>	200 ft	38-40 days
scrub woods	black-billed magpie	<i>Pica pica</i>	200 ft	39-50 days
woods	American crow	<i>Corvus brachyrhynchos</i>	200 ft	30-40 days
cliffs/trees	common raven	<i>Corvus corax</i>	200 ft*	55-63 days
tree/cavity	juniper titmouse	<i>Parus inornatus ridgwayi</i>	100 ft	31-33 days
scrub	verdin	<i>Auriparus flaviceps</i>	300 ft	35 days
woodlands	bushtit	<i>Psaltiriparus minimus</i>	200 ft	26-28 days
scrub	cactus wren	<i>Campylorhynchus brunneicapillus</i>	300 ft	36-39 days
rock outcrops	rock wren	<i>Salpinctes obsoletus</i>	300 ft	26-30 days
rock outcrops	canyon wren	<i>Catherpes mexicanus</i>	300 ft	27-33 days
woodlands/cavity	Bewick's wren	<i>Thryomanes bewickii</i>	200 ft	28 days
woodlands/cavity	mountain bluebird	<i>Sialia currucoides</i>	100 ft	31-35 days
woodlands/cavity	Townsend's solitaire	<i>Myadestes townsendii</i>	100 ft	25 days
woodlands	northern mockingbird	<i>Mimus polyglottos</i>	200 ft	23-28 days
sagebrush	sage thrasher	<i>Oreoscoptes montanus</i>	300 ft	26-29 days
scrub	Bendire's thrasher	<i>Toxostoma bendirei</i>	300 ft	28 days
scrub	Crissal thrasher	<i>Toxostoma crissale</i>	300 ft	25-26 days
tree in scrub	loggerhead shrike	<i>Lanius ludovicianus</i>	300 ft	31-37 days
woodlands	gray vireo	<i>Vireo vicinior</i>	200 ft	26-28 days
Ground	Virginia's warbler	<i>Vermivora virginiae</i>	300 ft	23-26 days
woodlands/cavity sensitive	Lucy's warbler	<i>Vermivora luciae</i>	300 ft	23 days
woodlands	yellow-rumped warbler	<i>Dendroica coronata auduboni</i>	200 ft	24-27 days
Scrub	MacGillivray's warbler	<i>Opornis tolmei</i>	300 ft	19-23 days



Habitat	Common name	Scientific name	Buffer Size	time from eggs to fledging
Ground	Wilson's warbler	<i>Wilsonia pusilla</i>	300 ft	21-24 days
Scrub	yellow-breasted chat	<i>Cteria virens</i>	300 ft	19-23 days
woodlands	western tanager	<i>Piranga ludoviciana</i>	200 ft	23-24 days
Scrub	pyrrhuloxia	<i>Cardinalis sinuatus</i>	200 ft	24 days
Scrub	lazuli bunting	<i>Passerina amoena</i>	300 ft	22-27 days
Scrub	green-tailed towhee	<i>Pipilo chlorus</i>	300 ft	23-24 days
Scrub	spotted towhee	<i>Pipila maculatus</i>	300 ft	21-22?days
Scrub	Abert's towhee	<i>Pipila aberti</i>	300 ft	25-27 days
woodlands	chipping sparrow	<i>Spizella passerine</i>	200 ft	20-26 days
sagebrush	Brewer's sparrow	<i>Spizella breweri</i>	300 ft	19-22 days
sagebrush	black-chinned sparrow	<i>Spizella atrogularis</i>	300 ft	23 days
sagebrush	vesper sparrow	<i>Pooecetes gramineus</i>	300 ft	31-35 days
Scrub	lark sparrow	<i>Chondestes grammacus</i>	300 ft	20-33 days
sagebrush	black-throated sparrow	<i>Amphispiza bilineata</i>	300 ft	22 days
sagebrush	sage sparrow	<i>Amphispiza belli</i>	300 ft	22-26 days
sagebrush	western meadowlark	<i>Sturnella neglecta</i>	300 ft	37-41 days
woodlands	Brewer's blackbird	<i>Euphagus cyanocephalus</i>	200 ft	25-26 days
Alpine	black rosy-finch	<i>Leucosticte atratus</i>	200 ft	32-34 days
woodlands	Cassin's finch	<i>Carpodacus cassinii</i>	200 ft	26-28 days
woodlands	red crossbill	<i>Loxia curvirostra</i>	200 ft	30-38 days
woodlands	lesser goldfinch	<i>Carduelis psaltria</i>	200 ft	33 days
woodlands	evening grosbeak	<i>Coccothraustes vespertinus</i>	200 ft	25-28 days
ledge or cavity	House finch	<i>Carpodacus mexicanus</i>	100 ft	23-33 days

\* = nest may be removed with FWS depredation permit



## References

- Baicich, Paul J. and Colin J. O. Harrison. 1997. *A Guide to the Nests, Eggs, and Nestlings of North American Birds*.
- CalPIF (California Partners in Flight). 2009. Version 1.0. *The Desert Bird Conservation Plan: a Strategy for Protecting and Managing Desert Habitats and Associated Birds in California*. California Partners in Flight. <http://www.prbo.org/calpif/plans.html>
- Ehrlich, Paul R., David S. Dobkin, and Darryl Wheye. 1988. *The Birder's Handbook*. Simon and Schuster/ Fireside Books. New York, New York.







## **Appendix 3A**

Nevada Division of Water  
Resources Water Rights  
Database Records







Basin	App	Change App.	Cert	File Date	Status <sup>1</sup>	Source <sup>2</sup>	POD QQ	POD Qtr	POD Sec	POD Twn	POD Rng	Div Rate (CFS)	Type of Use	Sup	Priority Date	Annual Duty	Units <sup>3</sup>	County	Owner of Record
173B	10039			10/15/1936	CAN	STR	SE	N2	35 11N	58E	57E	0	PWR		10/15/1936	0		NY	MANZONI, JOHN
173B	10200	9586	2760	1/26/1938	CER	STR	SE	SW	28 06N	57E	57E	0.11	MM		4/9/1932	80,344	AFA	NY	HAZEN, JOSEPH
173B	1033			6/29/1908	CAN	STR			06N	57E	57E		0	IRR	6/29/1908	0		NY	QUINN, HARRY
173B	1034			6/29/1908	CAN	STR			06N	57E	57E		0	IRR	6/29/1908	0		NY	WEAL, HUGH
173B	10496			4/25/1940	WDR	SPR	SE	NW	16 11N	59E	59E		0	MM	4/25/1940	0		NY	CURRENT CREEK MINING CO.
173B	10499			5/2/1940	WDR	SPR	SW	NW	16 11N	58E	58E		0	DOM	5/2/1940	0		NY	U.S.-FOREST SERVICE
173B	10507		3273	5/18/1940	CER	STR	SW	SE	14 04N	55E	55E	0.785	IRR		5/18/1940	567.32	AFA	NY	CROSS L. RANCHES LLC
173B	10547			8/9/1940	CAN	SPR	SE	SE	9 06N	57E	57E		0	MM	8/9/1940	0		NY	IRWIN, PAUL
173B	10601		3062	11/29/1940	CER	STR	SE	SW	27 06N	57E	57E	0.5	MM		11/29/1940	361.88	AFA	NY	OLD ENGLISH GOLD CORPORATION
173B	10622			2/18/1941	WDR	RES			05N	54E	54E		1	STK	2/18/1941			NY	SHARP, HOWARD N.
173B	10835		3046	6/11/1942	CER	STR	SE	NE	30 06N	57E	57E	0.001	STK		6/11/1942	0.4603	AFA	NY	CROSS L. RANCHES, LLC
173B	10836		3047	6/11/1942	CER	SPR	SE	SE	14 06N	56E	56E	0.003	STK		6/11/1942	2.2403	AFA	NY	CROSS L. RANCHES, LLC
173B	10837			6/11/1942	DEN	SPR	SE	SW	19 03N	55E	55E		0	STK	6/11/1942	0	AFA	NY	BUCK HORN CATTLE COMPANY
173B	10866		3039	9/19/1942	CER	STR	SE	NE	28 04N	55E	55E	0.016	STK		9/19/1942	11.201	AFA	NY	MESQUITE LAND CO.
173B	1089			8/13/1908	WDR	STR			15N	57E	57E		5	IRR	8/13/1908	0	WP	NY	EUREKA LIVESTOCK CO.
173B	10955		4104	5/10/1943	CER	STR	SE	NE	28 04N	55E	55E		1	IRD	5/10/1943	269	AFA	NY	SHARP, NORMAN K.
173B	11037		2909	12/10/1943	CER	STR	NE	SW	3 03N	52E	52E	0.003	STK		12/10/1943	2.1789	AFA	NY	HELEN FALLINI LIVING TRUST & FALLINI 1983
173B	11136			6/27/1944	WDR	SPR						0.5	DOM		6/27/1944	0		NY	NEVADA-DEPARTMENT OF TRANSPORTATION
173B	1118			9/5/1908	CAN	STR		NE	35 05N	56E	56E		0	IRR	9/5/1908	0		NY	MORGAN, W.C.
173B	11199		3429	11/10/1944	CER	SPR	NE	SW	9 03N	55E	55E	0.003	STK		11/10/1944	2.2403	AFA	NY	CROSS L. RANCHES, LLC
173B	11200		3085	11/10/1944	CER	OSW	NW	NE	24 05N	54E	54E	0.007	STK		11/10/1944	5.5854	AFA	NY	CROSS L. RANCHES, LLC
173B	11201		3348	11/10/1944	CER	UG	NW	SW	17 04N	54E	54E	0.015	STK		11/10/1944	11.201	AFA	NY	CROSS L. RANCHES, LLC
173B	11202			11/10/1944	ABR	STR	SE	NE	30 06N	57E	57E		0	IRR	11/10/1944	0	AFS	NY	BORDOLI, A.F.
173B	11202	CHANGED BY:	13004		CER	STR													
173B	11232		3011	1/10/1945	CER	STR	SE	NE	30 06N	57E	57E	1.07	IRR		1/10/1945	449.14	AFA	NY	CROSS L. RANCHES LLC
173B	11256			3/31/1945	DEN	UG	SE	SW	12 03N	54E	54E	0.25	STK		3/31/1945	12.889	AFA	NY	LAMB, SHELDON
173B	11467		3383	12/21/1945	CER	STR	NE	SW	3 03N	52E	52E	0.032	STK		12/21/1945	22.955	AFA	NY	HELEN FALLINI LIVING TRUST & FALLINI 1983
173B	11468			12/21/1945	CAN	STR	SE	NE	30 06N	57E	57E		0	PWR	12/21/1945	0		NY	STEELE, ROSS F.
173B	11545		4798	4/9/1946	CER	STR	SW	SE	14 04N	55E	55E	7	IRR		4/9/1946	640	AFA	NY	CROSS L. RANCHES LLC
173B	11545	CHANGED BY:	17516		WDR	STR													
173B	11568			5/3/1946	DEN	UG	SW	NW	12 03N	54E	54E		0	STK	5/3/1946	0	AFA	NY	LAMB, SHELDON
173B	1169			11/5/1908	CAN	SPR	SE	SE	29 13N	55E	55E		0	STK	11/5/1908	0		NY	TOGNONI, JOSEPH C.
173B	1170			11/5/1908	CAN	SPR	NE	NE	9 12N	55E	55E		0	STK	11/5/1908	0		NY	TOGNONI, JOSEPH C.
173B	11701		3103	10/5/1946	CER	STR	NE	NE	31 04N	53E	53E	0.032	STK		10/5/1946	22.833	AFA	NY	HELEN FALLINI LIVING TRUST & FALLINI 1983
173B	11714	DDUCKWCR	3036	11/2/1946	CER	STR	SW	NE	28 12N	56E	56E	1.19	IRR		01/01/1868	320	AFA	NY	HALSTED-FORSGREN RANCHES INC.
173B	11753		3104	1/15/1947	CER	STR	NE	SW	3 03N	52E	52E	0.032	STK		1/15/1947	22.955	AFA	NY	HELEN FALLINI LIVING TRUST & FALLINI 1983
173B	1177			11/7/1908	CAN	STR	SE	SE	31 05N	56E	56E		0	IRR	11/7/1908	0		NY	CHRISTIAN, RALPH
173B	1178			11/7/1908	CER	STR	NW	NE	29 04N	55E	55E	0.3	IRR		11/7/1908	90	AFA	NY	CROSS L. RANCHES, LLC
173B	11787	2902		2/24/1947	DEN	SPR	NE	NE	25 03N	54E	54E		0	STK	3/5/1914	0	AFA	NY	SHARP, H.N.
173B	1179			11/7/1908	CAN	STR	NW	NE	10 06N	57E	57E		0	IRR	11/7/1908	0	AFA	NY	WEAL, HUGH
173B	11829		3445	4/12/1947	CER	STR	SE	SW	27 06N	57E	57E	0.85	PWR		4/12/1947	0	AFA	NY	OLD ENGLISH GOLD CORPORATION
173B	1183			11/12/1908	CAN	STR		SE	4 10N	58E	58E		0	IRR	11/12/1908	0		NY	CALLAWAY, FRANK
173B	11926		3845	7/24/1947	CER	UG	NE	SE	34 06N	54E	54E	0.001	STK		7/24/1947	0.7365	AFA	NY	GRUBE, B.H.
173B	11927		3846	7/24/1947	CER	UG	SE	NE	29 09N	56E	56E	0.001	STK		7/24/1947	0.3069	AFA	NY	GRUBE, B.H.
173B	11977			8/26/1947	DEN	SPR	SE	SE	25 10N	54E	54E		0	STK	8/26/1947	0	AFA	NY	LOCKE, MADISON
173B	1227			12/28/1908	DEN	SPR			12N	56E	56E		0	IRR	12/28/1908	0	AFA	NY	WILLIAMS, CHARLES W.
173B	12382			3/26/1948	CAN	SPR	NE	NW	28 08N	58E	58E		0	STK	3/26/1948	0	AFA	NY	GARRETT, EMORY
173B	12383			3/26/1948	CAN	SPR	SE	SE	27 07N	58E	58E		0	STK	3/26/1948	0	AFA	NY	GARRETT, EMORY
173B	12529		4050	7/8/1948	CER	SPR	NE	SE	25 03N	54E	54E	0.016	STK		7/8/1948	11.416	AFA	NY	CROSS L. RANCHES, LLC
173B	12578			8/17/1948	WDR	OSW	NE	NE	12 05N	52E	52E		0	STK	8/17/1948	0	AFA	NY	FALLINI BROTHERS
173B	12596			8/23/1948	DEN	UG	NW	SW	5 03N	54E	54E	1	STK		8/23/1948	11.416	AFA	NY	SHARP, H.N.
173B	1262			1/25/1909	DEN	STR	SW	NW	34 12N	56E	56E		0	IRR	1/25/1909	0	AFA	NY	TOGNONI, J.R.
173B	1263			1/25/1909	DEN	SPR			12N	56E	56E		0	IRR	1/25/1909	0	AFA	NY	COLLINS, J.
173B	12665		4162	10/2/1948	CER	SPR	SE	NE	2 08N	58E	58E	0.011	STK		10/2/1948	7.8257	AFA	NY	SHARP, HOWARD
173B	12666		4163	10/2/1948	CER	SPR	SW	SE	21 08N	58E	58E	0.011	STK		10/2/1948	7.8257	AFA	NY	SHARP, HOWARD
173B	12667		4164	10/2/1948	CER	SPR	SW	NW	36 08N	58E	58E	0.011	STK		10/2/1948	7.8257	AFA	NY	SHARP, HOWARD
173B	12668		4165	10/2/1948	CER	SPR	NW	SW	18 07N	59E	59E	0.011	STK		10/2/1948	7.8257	AFA	NY	SHARP, HOWARD



## Nevada Division of Water Rights Database, Hydrographic Abstract Advanced Search, Basin 173B Railroad Valley/Northern Part

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173B	12669		4166	10/2/1948	CER	SPR	SW	SE	9 08N	58E	58E	0.011	STK		10/2/1948	7.8257	AFA	NY	SHARP, HOWARD
173B	1269			1/29/1909	CAN	SPR			03N	55E	55E		0 STK		1/29/1909	0		NY	HORTON, ANNIE (MRS.)
173B	12716			11/6/1948	WDR	SPR	SE	SE	27 07N	58E	58E		0 STK		11/6/1948	0	AFA	NY	GARRETT, EMORY
173B	12717			11/6/1948	CAN	SPR	NE	NW	28 08N	58E	58E		0 STK		11/6/1948	0	AFA	NY	GARRETT, EMORY
173B	12738		3893	11/26/1948	CER	UG	NW	SE	34 05N	54E	54E	0.011	STK		11/26/1948	5.9844	AFA	NY	CROSS L. RANCHES, LLC
173B	12739			11/26/1948	CAN	STR	SW	NW	36 05N	53E	53E		0 STK		11/26/1948	0	AFA	NY	BORDOLI, A F
173B	12757			12/7/1948	CAN	SPR	SW	SE	19 05N	53E	53E		0 STK		12/7/1948	0	AFA	NY	BORDOLI, A F
173B	12758			12/7/1948	CAN	STR	NE	NW	32 05N	53E	53E		0 STK		12/7/1948	0	AFA	NY	BORDOLI, A F
173B	1279			2/4/1909	CAN	SPR	SE	SE	11 08N	57E	57E		0 IRR		2/4/1909	0		NY	HORTON, ANNIE (MRS.)
173B	12847			3/11/1949	WDR	STR	NW	SE	36 16N	57E	57E	0.04	MM		3/11/1949	0		WP	FLOYD, PAUL H.
173B	13004	11202	3902	8/4/1949	CER	STR	SE	NE	30 06N	57E	57E	0.5	IRR		11/10/1944	330	AFA	NY	CROSS L. RANCHES LLC
173B	13053			9/26/1949	CAN	SPR	NE	NW	28 08N	58E	58E		0 STK		9/26/1949	0	AFA	NY	GARRETT, EMERY
173B	1310			2/23/1909	CAN	SPR			13 13N	57E	57E		0 STK		2/23/1909	0		WP	ROSEVAR, JOHN H.
173B	1311			2/23/1909	CAN	SPR			14N	57E	57E		0 STK		2/23/1909	0		WP	ROSEVAR, JOHN H.
173B	1312			3/1/1909	CAN	STR		NW	5 12N	56E	56E		0 IRR		3/1/1909	0		NY	TOGNONI, J.C.
173B	1313			3/1/1909	CAN	SPR			11N	56E	56E		0 STK		3/1/1909	0		NY	TOGNONI, J.C.
173B	1354			5/13/1909	CAN	SPR			10N	59E	59E		0 DOM		5/13/1909	0		NY	STRAUSS, WM. A.
173B	1355			5/15/1909	CAN	STR			1 11N	57E	57E		0 IRR		5/15/1909	0		NY	WESTERN DEVELOPING CO
173B	13583			12/29/1950	DEN	STR	SW	NE	28 12N	56E	56E	3.4	IRR		12/29/1950	1360	AFS	NY	RUSSELL, DANIEL H.
173B																			NORMA J. BRADSHAW (40%), KARL TODD BRADSHAW (UNDIV 20%), JODY MAE BRADSHAW (UNDIV 20%), NORMA J. HALSTEAD, E.D.
173B	13671		4330	4/5/1951	CER	STR	SE	SW	34 12N	56E	56E	3	IRR		4/5/1951	703.4	AFA	NY	BRADSHAW (UNDIV 20%), JODY MAE BRADSHAW (UNDIV 20%), NORMA J. HALSTEAD, E.D.
173B	13682			4/16/1951	ABR	STR	NW	NW	27 12N	56E	56E	0	STK		4/16/1951	0	AFA	NY	MANZONIE, JOHN
173B	13682	CHANGED BY:	29123		CER	STR												NY	MANZONIE, DELLIE
173B	13828			9/10/1951	CAN	UG	NW	NW	32 10N	57E	57E	0	IRR		9/10/1951	0	AFA	NY	MANZONIE, DELLIE
173B	13829			9/10/1951	CAN	OSW	SE	SE	30 10N	57E	57E	0	IRR		9/10/1951	0	AFA	NY	MANZONIE, DELLIE
173B	13839			9/14/1951	CAN	SPR	SW	SW	8 10N	56E	56E	0	STK		9/14/1951	0		NY	YOUNG, E.K.
173B	13840			9/14/1951	CAN	UG		N2	7 09N	57E	57E	0	IRR		9/14/1951	0	AFA	NY	WILHOITE, AVENELL
173B	13841			9/14/1951	WDR	UG	NE	SE	8 09N	57E	57E	0	IRR		9/14/1951	0		NY	SHARP, HOWARD
173B	13917			11/19/1951	CAN	SPR	NE	SE	8 09N	57E	57E	0	STK		11/19/1951	9.5136	AFA	NY	SHARP, HOWARD
173B	13918			11/19/1951	CAN	SPR	NW	NE	14 09N	56E	56E	0.025	STK		11/19/1951	217.19	AFA	NY	NEVADA-DEPARTMENT OF WILDLIFE
173B	13998		4090	1/17/1952	CER	UG	SW	NE	24 08N	55E	55E	0.3	REC		1/17/1952	362.13	AFA	NY	NEVADA-DEPARTMENT OF WILDLIFE
173B	13999		4447	1/17/1952	CER	OSW	NW	NE	23 08N	55E	55E	1.12	REC		1/17/1952	0	AFA	NY	NEVADA-DEPARTMENT OF WILDLIFE
173B	14000		4091	1/17/1952	CER	UG	NE	SE	2 08N	56E	56E	0.51	REC		1/17/1952	311.31	AFA	NY	NEVADA-DEPARTMENT OF WILDLIFE
173B	14001		4092	1/17/1952	CER	UG	SW	NW	2 08N	56E	56E	0.43	REC		1/17/1952	231.67	AFA	NY	NEVADA-DEPARTMENT OF WILDLIFE
173B	14002		4093	1/17/1952	CER	UG	SW	NE	3 08N	56E	56E	0.32	REC		1/17/1952	202.73	AFA	NY	NEVADA-DEPARTMENT OF WILDLIFE
173B	14003		4094	1/17/1952	CER	UG	NE	SW	34 09N	56E	56E	0.28	REC		1/17/1952	361.99	AFA	NY	NEVADA-DEPARTMENT OF WILDLIFE
173B	14004		9736	1/17/1952	CER	UG	SW	NE	5 06N	56E	56E	0.354	REC		1/17/1952	256.28	AFA	NY	NEVADA-DEPARTMENT OF WILDLIFE
173B	14005		4095	1/17/1952	CER	UG	SW	NE	4 08N	57E	57E	0	STO		5/19/1952	0	AFS	WP	HALSTEAD, BEATRICE MRS.
173B	14302			5/19/1952	WDR	RES	SW	SW	33 15N	57E	57E		0 IRR		5/26/1952	0		NY	VORPAHL, WELDON
173B	14308			5/26/1952	WDR	UG	SE	NW	4 09N	57E	57E		0 IRR		5/26/1952	0		NY	HICKMAN, MRS. LILA ELLEN
173B	14309			5/26/1952	CAN	UG	NE	NW	5 09N	57E	57E		0 IRR		5/26/1952	0		NY	VORPAHL, BARBARA S
173B	14334			6/18/1952	CAN	UG	NW	SE	SE	5 09N	57E		0 IRR		6/18/1952	0		NY	SCHOFIELD, JACK L
173B	14335			6/18/1952	WDR	UG	SE	NE	4 09N	57E	57E		0 IRR		6/18/1952	0		NY	MATHEWS, MARTHA L.
173B	14336			6/18/1952	WDR	UG	NW	SE	18 09N	57E	57E		0 IRR		6/18/1952	0		NY	WOTKINS, ELIZABETH A.
173B	14350			6/25/1952	WDR	UG	NE	NE	31 10N	57E	57E	6.4	IRR		6/25/1952	1280	AFA	NY	SIM, WALTER N.
173B	14351			6/25/1952	WDR	UG	NW	SE	31 09N	57E	57E		0 IRR		6/25/1952	0		NY	MILLER, HENRIETTA E.
173B	14352			6/25/1952	CAN	UG	NE	NE	8 09N	57E	57E		0 IRR		6/25/1952	0		NY	JACOBSON, HAVEN E.
173B	14353			6/25/1952	WDR	UG	NW	NE	12 09N	56E	56E		0 IRR		6/25/1952	0		NY	HILLYARD, GRACE S.
173B	14354			6/25/1952	WDR	UG	NW	SW	33 10N	57E	57E		0 IRR		6/25/1952	0		NY	HAGSTROM, EVELYN O.
173B	14355			6/25/1952	WDR	UG	NW	NE	13 09N	56E	56E		0 IRR		6/25/1952	0		NY	HILLYARD, THOMAS E.
173B	14356			6/25/1952	WDR	UG	NW	NW	33 10N	57E	57E		0 IRR		6/25/1952	0		NY	MATHEWS, ALONZO R.
173B	14357			6/25/1952	WDR	UG	NW	NE	1 09N	56E	56E		0 IRR		6/25/1952	0		NY	SCOHFIELD, THOMAS
173B	14358			6/25/1952	WDR	UG	NE	NE	36 10N	56E	56E		0 IRR		6/25/1952	0		NY	HARRIS, THOMAS R.
173B	14359			6/25/1952	CAN	UG	NW	SW	28 10N	57E	57E	6.4	IRR		6/25/1952	1280	AFS	NY	STEWART, MARCIA
173B	14371			6/27/1952	WDR	UG	NW	SW	29 10N	57E	57E	0	IRR		6/27/1952	0	AFS	NY	WILLIAMS, NEVA E.
173B	14372			6/27/1952	WDR	UG	NW	NW	12 09N	56E	56E	0	IRR		6/27/1952	0		NY	



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173B	14373			6/27/1952	WDR	UG	NW	NW	18 09N	57E	57E	0	0	0	6/27/1952	0		NY	WEGGE, WILLIAM A. JR.
173B	14374			6/27/1952	WDR	UG	NW	NW	30 10N	57E	57E	0	0	0	6/27/1952	0	0 AFS	NY	STEWART, HUBERT
173B	14375			6/27/1952	WDR	UG	NW	NW	8 09N	57E	57E	0	0	0	6/27/1952	0		NY	WILLIAMSON, VEDA MRS.
173B	14376			6/27/1952	WDR	UG	NE	NE	30 10N	57E	57E	0	0	0	6/27/1952	0	0 AFS	NY	DOW, MARY ELLA
173B	14382			7/1/1952	WDR	UG	NW	NW	12 09N	56E	56E	6.4	0	0	7/1/1952			NY	TWOMEY, JAMES F.
173B	14383			7/1/1952	WDR	UG	NW	NE	36 10N	56E	56E	6.4	0	0	7/1/1952			NY	MACLEOD, ROBERT K.
173B	14384			7/1/1952	WDR	UG	NE	NE	28 10N	57E	57E	0	0	0	7/1/1952	0	0 AFS	NY	WRIGHT, LAWRENCE A.
173B	14385			7/1/1952	WDR	UG	NE	NW	21 10N	57E	57E	0	0	0	7/1/1952	0	0 AFS	NY	WRIGHT, HELEN E.
173B	14386			7/1/1952	CAN	UG	NW	SW	19 10N	57E	57E	0	0	0	7/1/1952	1280	0 AFS	NY	GARDNER, CLYDE WAYNE
173B	14387			7/1/1952	CAN	UG	NW	NW	19 10N	57E	57E	6.4	0	0	7/1/1952	1280	0 AFS	NY	GARDNER, AFTON
173B	14388			7/1/1952	WDR	UG	NW	SW	18 10N	57E	57E	0	0	0	7/1/1952	0	0 AFS	NY	GARDNER, MARY ETHEL
173B	14389			7/1/1952	WDR	UG	NW	NE	23 09N	57E	57E	6.4	0	0	7/1/1952			NY	READ, OLLIE R.
173B	14390			7/1/1952	WDR	UG	NE	NE	32 10N	57E	57E	6.4	0	0	7/1/1952	1280	0 AFS	NY	WILLIAMS, WILLIAM C.
173B	14391			7/1/1952	WDR	UG	NE	NE	29 10N	57E	57E	0	0	0	7/1/1952	0	0 AFS	NY	WILLIAMS, MARY L.
173B	14392			7/1/1952	WDR	UG	NE	NE	20 10N	57E	57E	0	0	0	7/1/1952	0	0 AFS	NY	COOK, GRANT
173B	14393			7/1/1952	WDR	UG	NW	SW	20 10N	57E	57E	6.4	0	0	7/1/1952	1280	0 AFS	NY	WALLACE, MILTON K.
173B	14394			7/1/1952	WDR	UG	NW	NW	17 10N	57E	57E	0	0	0	7/1/1952	0	0 AFS	NY	WILLIAMS, SIMONA P.
173B	14395			7/1/1952	WDR	UG	NW	NW	25 10N	56E	56E	0	0	0	7/1/1952	0		NY	ZINNI, ANTHONY E.
173B	14396			7/1/1952	WDR	UG	NW	SW	25 10N	56E	56E	0	0	0	7/1/1952	0		NY	ZINNI, EVELYNE E.
173B	14397			7/1/1952	WDR	UG	NW	NW	24 09N	56E	56E	0	0	0	7/1/1952	0		NY	UDALL, THOMAS
173B	14398			7/3/1952	WDR	UG	NW	SW	17 10N	57E	57E	6.4	0	0	7/3/1952	1280	0 AFS	NY	WALLACE, MILTON K.
173B	14399			7/3/1952	WDR	UG	NW	SW	20 10N	57E	57E	6.4	0	0	7/3/1952	1280	0 AFS	NY	WILLIAMS, MARY L.
173B	14411			7/7/1952	WDR	UG	NW	NE	36 10N	56E	56E	0	0	0	7/7/1952	0		NY	MILLER, DAMNON
173B	14412			7/7/1952	CAN	UG	NW	SW	24 10N	56E	56E	0	0	0	7/7/1952	0		NY	GARDNER, FLORENCE L.
173B	14413			7/7/1952	CAN	UG	NW	NW	24 10N	56E	56E	0	0	0	7/7/1952	0		NY	GARDNER, EARL L.
173B	14414			7/7/1952	WDR	UG	NW	NW	13 09N	56E	56E	6.4	0	0	7/7/1952			NY	TARRELL, WILLIAM
173B	14416			7/8/1952	WDR	UG	NE	NE	29 10N	57E	57E	6.4	0	0	7/8/1952			NY	WALLACE, MILTON K.
173B	14417			7/8/1952	WDR	UG	NW	NW	18 10N	57E	57E	6.4	0	0	7/8/1952			NY	SHRIVER, EZRA B.
173B	14418			7/8/1952	WDR	UG	NW	SE	17 10N	57E	57E	0	0	0	7/8/1952	0		NY	BAKER, ARTHUR C.
173B	14419			7/8/1952	WDR	UG	NW	NW	24 09N	56E	56E	6.4	0	0	7/8/1952	0		NY	HAWKINS, THOMAS UDALL
173B	14420			7/8/1952	WDR	UG	NW	NW	24 09N	56E	56E	6.4	0	0	7/8/1952	1280	0 AFS	NY	HANSEN, JEWEL EVELYN
173B	14426			7/14/1952	WDR	UG	NE	NE	17 10N	57E	57E	0	0	0	7/14/1952	0		NY	AWERKAMP, EDWARD P.
173B	14432			7/17/1952	WDR	UG	NW	NW	24 09N	56E	56E	0	0	0	7/17/1952	0	0 AFS	NY	OTIS, GEORGE K.
173B	14433			7/17/1952	WDR	UG	NW	NE	3 09N	57E	57E	6.4	0	0	7/17/1952			NY	OTIS, RUTH
173B	14434			7/17/1952	WDR	UG	NW	SE	3 09N	57E	57E	6.4	0	0	7/17/1952			NY	OTIS, ROBERT M. SR.
173B	14435			7/17/1952	CAN	UG	NW	NE	2 09N	57E	57E	6.4	0	0	7/17/1952			NY	OTIS, ROBERT JR.
173B	14436			7/17/1952	WDR	UG	NW	NW	13 09N	56E	56E	0	0	0	7/17/1952	0	0 AFS	NY	STANTON, PETER
173B	14437			7/17/1952	CAN	UG	NW	NE	2 09N	57E	57E	6.4	0	0	7/17/1952			NY	OTIS, ROBERT JR.
173B	14472			8/4/1952	WDR	UG	NW	NW	13 09N	56E	56E	0	0	0	8/4/1952	0	0 AFS	NY	WEGGE, MARY GRIGSBY
173B	14473			8/4/1952	WDR	UG	NW	NW	24 09N	56E	56E	0	0	0	8/4/1952	0	0 AFS	NY	WEGGE, JAMES ROBERT
173B	14496			8/21/1952	CAN	UG	NW	NW	24 09N	56E	56E	0	0	0	8/21/1952	0	0 AFS	NY	LIVINGSTON, EARL SAMUEL
173B	14513			9/1/1952	WDR	UG	NW	NE	10 09N	57E	57E	0	0	0	9/1/1952	0		NY	BLEY, HERBERT G.
173B	14514			9/3/1952	CAN	UG	NW	NE	26 10N	56E	56E	6.4	0	0	9/3/1952			NY	DALLEY, WELDON H.
173B	14515			9/3/1952	CAN	UG	NE	NW	26 10N	56E	56E	6.4	0	0	9/3/1952			NY	DALLEY, DON WELDON
173B	14519			9/11/1952	WDR	UG	NW	SE	10 09N	57E	57E	0	0	0	9/11/1952	0		NY	MARTIN, ROBERT D.
173B	14524			9/15/1952	CAN	UG	NW	NE	11 09N	57E	57E	0	0	0	9/15/1952	0		NY	MOORE, WILLIAM F.
173B	14525			9/15/1952	CAN	UG	NW	NE	13 10N	56E	56E	0	0	0	9/15/1952	0		NY	LEATART, MARJORY W.
173B	14526			9/15/1952	CAN	UG	NW	NW	13 10N	56E	56E	0	0	0	9/15/1952	0		NY	LEATART, DINGMAN L.
173B	14527			9/15/1952	CAN	UG	NW	NE	35 10N	56E	56E	0	0	0	9/15/1952	0		NY	FITZER, MILTON J.
173B	14550			9/19/1952	CAN	UG	NW	NE	12 09N	57E	57E	0	0	0	9/19/1952	0		NY	PATTERSON, D. CONSTANCE
173B	14551			9/19/1952	WDR	UG	NW	NE	14 09N	57E	57E	0	0	0	9/19/1952	0		NY	MOORE, ROBERT E.
173B	14552			9/19/1952	WDR	UG	NW	SE	11 09N	57E	57E	0	0	0	9/19/1952	0		NY	MOORE, JAMES A. JR.
173B	14553			9/19/1952	WDR	UG	NW	NE	15 09N	57E	57E	0	0	0	9/19/1952	0		NY	HARRISON, FREDERICK J.
173B	14554			9/19/1952	WDR	UG	NW	NE	13 09N	57E	57E	0	0	0	9/19/1952	0		NY	WALKER, ARTHUR P.
173B	14555			9/19/1952	WDR	UG	NW	NW	17 10N	57E	57E	0	0	0	9/19/1952	0		NY	PETERSON, HAROLD LAURENCE
173B	14577			10/14/1952	WDR	UG	NW	NW	24 10N	56E	56E	0	0	0	10/14/1952	0		NY	CRANDILL, LYLE Q.
173B	14578			10/14/1952	WDR	UG	NW	SW	24 10N	56E	56E	0	0	0	10/14/1952	0		NY	CRANDALL, THELMA



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173B	14615		4940	11/10/1952	CER	UG	NE	NW	1 09N	57E	57E	1.34	IRD		11/10/1952	196.4	AFA	NY	MCELROY, MARLIN W. & JANA M.
173B	14619			11/13/1952	WDR	UG	NW	S2	23 10N	56E	56E		0IRD		11/13/1952	0		NY	CRANDALL, THELMA
173B	14620			11/13/1952	WDR	UG	NW	NW	23 10N	56E	56E		0IRD		11/13/1952	0		NY	CRANDALL, LYLE Q.
173B	14642			11/26/1952	CAN	UG							0IRD		11/26/1952	0		NY	RIPLING, WILLIAM JOHN
173B	1467		261	10/20/1909	CER	STR			35 05N	56E	56E	0.1	IRR		10/20/1909	72.4	AFA	NY	CROSS L. RANCHES LLC
173B	1468		200	10/20/1909	CER	SPR	SE	NW	30 05N	57E	57E	0.115	IRR		10/20/1909	49.03	AFA	NY	CROSS L. RANCHES LLC
173B	14703			12/22/1952	WDR	UG	NE	SW	32 10N	57E	57E		0IRR		12/22/1952	0		NY	TRAUTMAN, FRED
173B	14724			12/23/1952	WDR	UG	NE	SE	11 09N	57E	57E		0IRD		12/23/1952	0		NY	DICKSON, BERT L.
173B	14749			12/30/1952	WDR	UG	NW	SE	13 09N	57E	57E		0IRD		12/30/1952	0		NY	NELSON, GEORGE OTIS
173B	14766			1/12/1953	WDR	UG	NW	SE	14 09N	57E	57E		0IRD		1/12/1953	0		NY	MERRIMAN, LAURENCE M.
173B	14767			1/12/1953	WDR	UG	NW	SE	12 09N	57E	57E		0IRD		1/12/1953	0		NY	NUNN, RITA GAIL
173B	14780			1/19/1953	WDR	UG		S2	36 10N	57E	57E		0IRD		1/19/1953	0		NY	MORGENROTH, HENRI
173B	14840			2/9/1953	WDR	UG	NE	SW	32 10N	57E	57E		0IRD		2/9/1953	0		NY	MILLER, GROVER F. JR.
173B	15058			5/14/1953	WDR	UG	NE	SE	31 10N	57E	57E		0IRR		5/14/1953	0		NY	TRAUTMAN, FRED
173B	1522			11/18/1909	CAN	STR			1 11N	56E	56E		0IRR		11/18/1909	0		NY	LEAK, E.C.
173B	15247		4623	8/4/1953	CER	UG	NW	SW	5 03N	54E	54E	0.015	STK		8/4/1953	11.201	AFA	NY	CROSS L. RANCHES, LLC
173B	15259			8/14/1953	CAN	UG	NE	NW	6 09N	57E	57E		0IRD		8/14/1953	0		NY	MANZONIE, GAILIN P.
173B	15260			8/14/1953	CAN	UG	NE	NE	6 09N	57E	57E		0IRD		8/14/1953	0		NY	MANZONIE, DELLIE
173B	15318			9/28/1953	CAN	UG	NW	NE	12 09N	57E	57E		0IRD		9/28/1953	0		NY	PATTERSON, D. CONSTANCE
173B	15319			9/28/1953	CAN	UG	NE	SE	2 09N	57E	57E		0IRR		9/28/1953	0		NY	STEPT, BARRY
173B	15320			9/28/1953	CAN	UG	NE	NE	2 09N	57E	57E		0IRR		9/28/1953	0		NY	OTIS, ROBERT M. JR.
173B	15451			12/21/1953	CAN	UG	NW	NE	31 10N	57E	57E		0IRD		12/21/1953	0		NY	WOTKINS, ELIZABETH ARMSTRONG
173B	1546			12/4/1909	CAN	STR			32 06N	57E	57E		0IRR		12/4/1909	0		NY	CONE, FRED S.
173B	15508			2/19/1954	CAN	UG	NW	SE	1 09N	57E	57E		0IRD		2/19/1954	0		NY	OTIS, RUTH
173B	15509			2/19/1954	CAN	UG	NW	NE	11 09N	57E	57E		0IRR		2/19/1954	0		NY	OTIS, R.M. SR.
173B	15524			3/3/1954	CER	UG	NE	SW	1 09N	57E	57E	1.34	IRR		3/3/1954	192	AFA	NY	JOHN & LAURA RUTLEDGE ANDREA AARON
173B	15544		4859	3/8/1954	CER	SPR	SW	SW	10 12N	56E	56E	0.05	QM		3/8/1954	0	AFA	NY	ALLEN LYNN
173B	15589		4799	4/7/1954	CER	SPR	SW	NW	16 11N	59E	59E	0.007	DOM		4/7/1954	0	AFA	NY	DUCKWATER SCHOOL DISTRICT
173B	15596		4800	4/12/1954	CER	SPR	SE	SW	32 07N	57E	57E	0.5	IRR		4/12/1954	177.2	AFA	NY	U.S.-FOREST SERVICE
173B	15630			5/7/1954	CAN	UG	SW	SE	9 10N	57E	57E	3.5	IRD		5/7/1954	0		NY	CROSS L. RANCHES LLC
173B	15631			5/7/1954	CAN	UG	E2	NE	17 10N	57E	57E		0IRD		5/7/1954	0		NY	GARDNER, BEN B.
173B	15653		5836	5/17/1954	CER	STR	SW	NW	29 06N	57E	57E	0.8	IRD		5/17/1954	97.18	AFA	NY	HILL, J.D.
173B	16683			8/2/1955	WDR	UG	NE	NE	10 10N	57E	57E		0IRD		8/2/1955	0		NY	CROSS L. RANCHES LLC
173B	16684			8/2/1955	CAN	UG	NE	SE	10 10N	57E	57E		5IRD		8/2/1955			NY	MALONE, WILLETTA N
173B	16700		4665	8/8/1955	CER	SPR	SE	NW	16 11N	59E	59E	0.031	OTH		8/8/1955	0	AFA	NY	NEVADA-DEPARTMENT OF TRANSPORTATION
173B	16728		5375	9/1/1955	CER	UG	NE	NW	35 09N	57E	57E	0.0065	IND		9/1/1955	4.7046	AFA	NY	SHELL OIL COMPANY
173B	16729		5376	9/1/1955	CER	UG	NE	NW	35 09N	57E	57E	0.026	IND		9/1/1955	18.825	AFA	NY	SHELL OIL COMPANY
173B	16800			12/5/1955	PER	STR	SW	NW	25 14N	56E	56E	1	IRR		12/5/1955	723.8	AFA	WP	HALSTEAD-FORSGREN RANCHES, INC.
173B	16801			12/5/1955	PER	STR	NE	NW	36 14N	56E	56E	1	IRR		12/5/1955	723.8	AFA	WP	HALSTEAD-FORSGREN RANCHES, INC.
173B	16829			1/6/1956	CER	STR	SE	SW	34 12N	56E	56E	3.2	IRD		1/6/1956	964.53	AFA	NY	NORMA J. BRADSHAW (40%), KARL TODD
173B	16855		5835	2/6/1956	WDR	UG	NW	NE	8 10N	57E	57E	3.2	IRD		2/6/1956			NY	BRADSHAW (UNDIV.20%), JODY MAE
173B	17075			10/24/1956	CAN	SPR	SE	SW	3 06N	57E	57E		0MM		10/24/1956	0		NY	JOHNSON, CLYDE
173B	17508			3/12/1958	CAN	OSW	SE	SE	30 10N	57E	57E		0IRR		3/12/1958	0	AFA	NY	STURGES, STEPHEN H.
173B	17516	11545		3/31/1958	WDR	STR	SE	SE	2 04N	55E	55E		0IRR		4/9/1946	0		NY	MANZONIE, DELLIE
173B	17558			5/14/1958	CAN	STR			21 10N	57E	57E	16.2	IRR		5/14/1958	0		NY	SHARP, HOWARD N
173B	17753			12/18/1958	WDR	UG	NE	SW	2 11N	56E	56E		0IRR		12/18/1958	0		NY	MANZONIE, ADELLIE
173B	17759			12/23/1958	WDR	UG	NW	NW	8 10N	57E	57E		0IRD		12/23/1958	0		NY	BRADSHAW, KARL
173B	17799			1/26/1959	CAN	UG	NW	NW	8 10N	57E	57E		0IRD		1/26/1959	0		NY	NIELSON, NORMAN LACONT
173B	17800			1/26/1959	CAN	UG	NW	NW	7 10N	57E	57E	4	IRD		1/26/1959	1280	AFA	NY	LABRUM, CYRIL J.
173B	17807			1/30/1959	CAN	UG	SW	SW	34 12N	56E	56E		0IRR		1/30/1959	0	AFA	NY	ASUMENDI, DOMINGO
173B	17809		5280	2/2/1959	CAN	SPR	SW	SE	2 13N	57E	57E	0.015	STK		2/2/1959	11.201	AFA	WP	RUSSELL, DANIEL H.
173B	17817			2/4/1959	CAN	STR			21 10N	57E	57E	20	IRR		2/4/1959			NY	MANZONIE, DELLIE
173B	17864			2/27/1959	WDR	UG	NW	NW	12 11N	56E	56E		0IRR		2/27/1959	0	AFA	NY	BARTHOLOMAE, WILLIAM A.
173B	17865			2/27/1959	CAN	UG	NE	SE	2 11N	56E	56E	2	IRR		2/27/1959	800	AFA	NY	HALSTEAD-FORSGREN RANCHES, INC.







## Nevada Division of Water Rights Database, Hydrographic Abstract Advanced Search, Basin 173B Railroad Valley/Northern Part

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173B	21966			4/22/1964	CAN	UG	NW	NE	27	06N	56E		0 IRR		4/22/1964	0	AFA	NY	CASEY, WILLIAM H
173B	21967			4/22/1964	CAN	UG	SW	NW	27	06N	56E	1.4 IRR			4/22/1964	320	AFA	NY	CASEY, WILLIAM H.
173B	21990		7348	5/11/1964	CER	SPR	NW	SE	26	16N	57E	0.007 MM			5/11/1964	0	AFA	WP	CENTURY GOLD, LLC
173B	22049			6/16/1964	DEN	UG	NE	NE	28	10N	57E	5.4 IRD			6/16/1964	1280	AFA	NY	MCCLARTY, CLARA G.
173B	22050		7564	6/16/1964	CER	UG	SE	SE	12	10N	57E	2.33 IRD			6/16/1964	640	AFA	NY	DIELEMAN, RICHARD W.
173B	22050	CHANGED BY:	76987T		WDR	UG													
173B	22050	CHANGED BY:	81692		RFA	UG													
173B	22050	CHANGED BY:	77161T		EXP	UG													
173B	22051		7754	6/16/1964	CER	UG	NE	NE	23	10N	57E	4.59 IRD			6/16/1964	640	AFA	NY	CORLIS-COLE, EVA M AND COLE, MICHAEL P
173B	22052			6/16/1964	CAN	UG	NE	NE	14	10N	57E	5.4 IRD			6/16/1964	1280	AFA	NY	FARMER, BEULAH
173B	22053			6/16/1964	CAN	UG	NE	NW	23	10N	57E		0 IRD		6/16/1964	0	AFA	NY	MCGUIRE, THERON Z.
173B	22054			6/16/1964	CAN	UG	NE	NE	22	10N	57E		0 IRD		6/16/1964	0	AFA	NY	EASTER, REX M.
173B	22055			6/16/1964	DEN	UG	NE	NW	21	10N	57E	5.4 IRD			6/16/1964	1280	AFA	NY	EASTER, VIRGINIA L.
173B	22056			6/16/1964	DEN	UG	NE	NW	22	10N	57E		0 IRD		6/16/1964	0		NY	JAMES, WANDA C.
173B	22057			6/16/1964	CAN	UG	NE	NW	13	10N	57E		0 IRD		6/16/1964	0	AFA	NY	BAILEY, JOE W.
173B	22058			6/16/1964	CAN	UG	NE	NW	14	10N	57E	5.4 IRD			6/16/1964	1280	AFA	NY	LANDERS, MURRIEL K.
173B	22059			7/11/1964	CAN	UG	SE	SE	34	05N	55E		0 IRR		7/11/1964	0		NY	SHARP, GERALD
173B	22080		7967	7/11/1964	CER	UG	SE	NW	35	05N	55E	2.7 IRR			7/11/1964	456	AFA	NY	CROSS L. RANCHES LLC
173B	22081			7/11/1964	CAN	UG	NE	SE	36	05N	55E		0 IRR		7/11/1964	0	AFA	NY	SHARP, NORMAN
173B	22264			9/28/1964	DEN	UG	NE	NW	33	10N	57E		0 IRD		9/28/1964	0	AFA	NY	WATSON, WYNONA K.
173B	22265			9/28/1964	DEN	UG	NE	NW	16	10N	57E		0 IRD		9/28/1964	0	AFA	NY	BIFFLE, JUANITA
173B	22346			12/2/1964	CAN	UG							0 IRR		12/2/1964			NY	CYR, VERN V.
173B	22347			12/11/1964	CAN	SPR	SE	SW	4	10N	58E		0 IRR		12/11/1964	0	AFA	NY	CYR, VERN V.
173B	22348			12/11/1964	CAN	UG	SE	SE	4	10N	58E		0 IRR		12/11/1964	0	AFA	NY	CYR, VERN V.
173B	22393			1/20/1965	CAN	UG	NE	NW	35	09N	57E		0 IND		6/20/1965	0		NY	REFINERS SALES COMPANY
173B	22604			5/25/1965	CAN	UG	SE	NW	7	10N	58E		0 IRD		5/25/1965	0	AFA	NY	DAVIES, PATRICIA
173B	22624	20844		6/10/1965	CAN	UG	NW	NW	33	05N	55E	5.4 IRD			11/13/1962	1280	AFA	NY	GIBSON, WILLIAM B.
173B	22625	20847		6/10/1965	CAN	UG	SW	NW	27	05N	55E		0 IRD		11/13/1962	0	AFA	NY	GIBSON, GEORGIA L.
173B	22711	20844		7/30/1965	DEN	UG	NW	NW	33	05N	55E		0 IRD		11/13/1962	0	AFA	NY	GIBSON, WILLIAM B
173B	22712	20847		7/30/1965	CAN	UG	SW	NW	27	05N	55E		0 IRD		11/13/1962	0		NY	GIBSON, AVA
173B	22780			9/14/1965	CAN	UG	NE	NW	31	15N	57E	5.4 IRD			9/14/1965	1280	AFA	WP	FULTON, MARGARET
173B	22781			9/14/1965	CAN	UG	NE	NW	32	15N	57E		0 IRD		9/14/1965	0		WP	QUADE, ROBERT N.
173B	22781	CHANGED BY:	25803		DEN	UG													
173B	22782			9/14/1965	CAN	UG	NE	NE	31	15N	57E		0 IRD		9/14/1965	0		WP	FULTON, G V
173B	22783			9/14/1965	CAN	UG	NE	NE	1	14N	56E		0 IRD		9/14/1965	0		WP	TUBBS, JUANELE
173B	22784			9/14/1965	CAN	UG		LT-10	6	14N	57E		0 IRD		9/14/1965	0	AFA	WP	TUBBS, FENNER
173B	22807		8024	9/29/1965	CER	UG	NE	NE	15	10N	57E	1 IRD		Y	9/29/1965	252.08	AFA	NY	GROVER, JUDITH ELLEN AND DANA B
173B	22808			9/29/1965	CAN	UG	NE	NE	27	10N	57E		0 IRD		9/29/1965	0	AFA	NY	BRUCE, WANDA E.
173B	22881			12/6/1965	DEN	UG	NE	NE	19	15N	57E		0 IRD		12/6/1965	0		WP	SANDLIN, WILEY O.
173B	22920			1/13/1966	CAN	UG	NW	NE	12	09N	57E	5.4 IRD			1/13/1966	1280	AFA	NY	LYNN, JEFFREY ALLEN
173B	23130			5/9/1966	CAN	SPR	SW	SE	36	16N	57E	0.5 MM			5/9/1966	0		WP	LEWIS, FRANK W.
173B	23163	20790		6/6/1966	CAN	UG	NW	NW	32	05N	55E		0 IRD		10/17/1962	0		NY	WARTES, THOMAS A.
173B	23164	20789		6/6/1966	CER	UG	NE	NE	32	05N	55E	5.26 IRD		Y	10/17/1962	1280	AFA	NY	SWARTZ, BETH LOUANN
173B	23182		7087	6/10/1966	CAN	UG	NW	NE	32	10N	57E		0 IRR		6/10/1966	0		NY	WIRTH, CHARLES N.
173B	23250	20846		7/21/1966	CAN	UG	SW	SW	27	05N	55E		0 IRR		11/13/1962	0		NY	GIBSON, ROY T.
173B	23251	20845		7/21/1966	CAN	UG	SE	SE	33	05N	55E		0 IRD		11/13/1962	0		NY	GIBSON, AVA B.
173B	23252	20978		7/21/1966	CER	UG	SE	SW	34	05N	55E	2.65 IRD		Y	1/21/1963	634	AFA	NY	JENKINS FARMS
173B	23252	CHANGED BY:	78269T		EXP	UG								Y					
173B	23252	CHANGED BY:	78270		ABR	UG								Y					
173B	23451			10/21/1966	DEN	SPR	SW	SW	25	16N	57E	0.1 MM			10/21/1966	0		WP	ONETHA MINES INC.
173B	23452			10/21/1966	DEN	SPR	NW	SE	26	16N	57E	0.1 MM			10/21/1966	0		WP	ONETHA MINES, INC.
173B	23453			10/21/1966	DEN	SPR	SW	NW	36	16N	57E		0.1 MM		10/21/1966	0		WP	ONETHA MINES INC.
173B	23487		7769	11/14/1966	CER	SPR	SW	SE	36	16N	57E	0.005 MM			11/14/1966	4.0203	AFA	WP	CENTURY GOLD, LLC
173B	23488		7770	11/14/1966	CER	SPR	SW	SE	36	16N	57E		0.006 MM		11/14/1966	4.0203	AFA	WP	CENTURY GOLD, LLC
173B	23489		7771	11/14/1966	CER	SPR	NW	SE	36	16N	57E	0.004 MM			11/14/1966	3.2223	AFA	WP	CENTURY GOLD, LLC
173B	23623	20846		1/20/1967	CAN	UG	NW	SW	27	05N	55E		0 IRD		11/13/1962	0		NY	GIBSON, ROY T.
173B	2363			2/29/1912	CAN	STR	SE	NW	14	44N	57E		6 MM		2/29/1912			WP	MARION MINING & MILLING CO.



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173B	2364			2/29/1912	CAN	STR	NE	NE	10 44N	57E	57E	6	MM		2/29/1912	542.98	AFA	WP	MARION MINING & MILLING CO.
173B	23746			3/13/1967	CAN	UG	NE	NW	35 09N	57E	57E	0.75	IND		3/13/1967	1280	AFA	NY	REFINERS SALES COMPANY
173B	23791			4/7/1967	CAN	UG	NE	NW	25 11N	56E	56E	5.4	IRR		4/7/1967	0		NY	BRADSHAW, MAE K.
173B	23822			4/21/1967	CAN	UG	NW	SE	29 05N	55E	55E		IND		4/21/1967	0		NY	GULF OIL CORPORATION
173B	23845			5/8/1967	WDR	UG	SE	SW	5 06N	56E	56E		IND		5/8/1967	0		NY	GULF OIL CORPORATION
173B	23853		7728	5/12/1967	CER	UG	SW	SE	14 06N	56E	56E	0.2	IRR		5/12/1967	144.75	AFA	NY	CROSS L. RANCHES LLC
173B	23854		7728	5/12/1967	CER	UG	NW	NE	23 06N	56E	56E	0.2	IRR		5/12/1967	144.75	AFA	NY	CROSS L. RANCHES LLC
173B	23855		7730	5/12/1967	CER	UG	SW	NE	27 06N	56E	56E		IRR		5/12/1967	80	AFA	NY	CROSS L. RANCHES LLC
173B	23856		7731	5/12/1967	CER	UG	SE	NW	27 06N	56E	56E	0.2	IRR		5/12/1967	144.75	AFA	NY	CROSS L. RANCHES LLC
173B	24006	20844		7/17/1967	CAN	UG	NW	NW	33 05N	55E	55E	5.4	IRD		11/13/1962	1280	AFA	NY	GIBSON, WILLIAM B.
173B	24212			1/18/1967	CAN	UG	SE	SE	6 06N	57E	57E		IND		1/18/1967	0		NY	GULF OIL COMPANY
173B	24228			11/20/1967	WDR	UG	NW	SW	10 07N	56E	56E	0	IND		11/20/1967	0		NY	GULF OIL CORPORATION
173B	24259			12/4/1967	WDR	UG	NW	NW	24 06N	56E	56E		IND		12/4/1967	0		NY	GULF OIL CORPORATION
173B	24261			12/8/1967	CAN	UG	NW	SW	13 10N	57E	57E		IRR		12/8/1967	0	AFA	NY	BAILEY, JOE W.
173B	24335			1/22/1968	WDR	UG	NW	NW	36 03N	54E	54E		IND		1/22/1968	0		NY	PAN AMERICAN PETROLEUM CORPORATION
173B	24348			1/29/1968	WDR	SPR	NE	SE	25 03N	54E	54E	0.5	IND		1/29/1968	0		NY	PAN AMERICAN PETROLEUM CORPORATION
173B	2444			6/10/1912	DEN	UG	SE	NW	3 11N	56E	56E		IRC		6/10/1912	0	AFA	NY	FLETCHER, E.L.
173B	24488			5/13/1968	CAN	UG	SE	NW	7 10N	58E	58E		IRD		5/13/1968	0	AFA	NY	DAVIES, PATRICIA
173B	2490			6/12/1912	DEN	STR	NE	NW	3 11N	56E	56E	25	IRC		6/12/1912	0	AFA	NY	FLETCHER, E.L.
173B	24592			7/19/1968	WDR	UG	NE	NW	17 07N	57E	57E		IND		7/19/1968	0		NY	GULF OIL CORPORATION
173B	24906			2/12/1969	CAN	UG	NE	NE	27 10N	57E	57E		IRD		2/12/1969	0		NY	WATSON, LEON J.
173B	24911		8198	2/18/1969	CER	UG	NE	SE	23 10N	57E	57E	3.23	IRD		2/18/1969	623.64	AFA	NY	CORLIS-COLE, EVA M AND COLE, MICHAEL P
173B	2498			9/4/1912	CAN	STR			23 06N	57E	57E	1	PWR		9/4/1912	0	AFA	NY	NEFF RANCHING COMPANY
173B	25050			4/23/1969	CAN	STR	SE	NW	8 10N	58E	58E	2.5	IRD		4/23/1969	594.9	AFS	NY	MCLARTY, KENNETH W.
173B	2512		2841	9/23/1912	CER	STR	SE	NE	30 06N	57E	57E	1.07	IRR		9/23/1912	324	AFA	NY	CROSS L. RANCHES LLC
173B	25199			8/5/1969	ABR	UG	SW	NW	27 06N	56E	56E		IRR		8/5/1969	0		NY	CASEY, WILLIAM H.
173B	25199	CHANGED BY:	26480		CAN	UG													
173B	25200			8/5/1969	CAN	UG	NW	NE	27 06N	56E	56E		IRR		8/5/1969	0		NY	CASEY, WILLIAM H.
173B	25202		7998	8/11/1969	CER	UG	SE	NW	23 06N	56E	56E	0.12	IRR	Y	8/11/1969	86.85	AFA	NY	CROSS L. RANCHES LLC
173B	25203		7998	8/11/1969	CER	UG	SE	NW	23 06N	56E	56E	0.184	IRR	Y	8/11/1969	133.18	AFA	NY	CROSS L. RANCHES LLC
173B	25207		8819	8/14/1969	CER	UG	SE	NE	15 10N	57E	57E	2.67	IRD	Y	8/14/1969	542	AFA	NY	GROVER, JUDITH ELLEN AND DANA B
173B	25240			8/26/1969	CAN	STR	SW	NE	23 11N	56E	56E		ISTO		8/26/1969	0	AFS	NY	BRADSHAW, MAE K.
173B	25307			10/6/1969	CAN	STR		W2	7 10N	58E	58E		IRR		10/6/1969	0	AFS	NY	DAVIES, PATRICIA M.
173B	25406			12/31/1969	CAN	UG	NE	NW	31 15N	57E	57E		IRD		12/31/1969	0		WP	FULTON, MARGARET
173B	25406			12/31/1969	CAN	UG	NE	NE	31 15N	57E	57E		IRD		12/31/1969	0		WP	FULTON, G.V.
173B	25407			12/31/1969	DEN	UG	NE	NE	1 14N	56E	56E		IRD		12/31/1969	0		WP	TUBBS, JUANELLE
173B	25406			12/31/1969	CAN	UG	NE	NE	6 14N	57E	57E	5.4	IRR		12/31/1969	1280	AFS	WP	TUBBS, FENNER
173B	25434			1/13/1970	CAN	STR	SW	NE	7 10N	58E	58E		IRR		1/13/1970	0	AFA	NY	DAVIES, PATRICIA M.
173B	25437			1/16/1970	CAN	UG	NW	NW	32 05N	55E	55E		IRR		1/16/1970	0	AFS	NY	WILLOWLANE INC.
173B	25803	22781		9/22/1970	DEN	UG	NE	NW	32 15N	57E	57E		IRD		9/14/1965	0		WP	QUADE, ROBERT N.
173B	25865			1/13/1970	CAN	SPR	SW	SW	25 16N	57E	57E		MM		1/13/1970	0	AFA	WP	LEWIS, FRANK W.
173B	26048			4/15/1971	WDR	UG	NE	SW	7 08N	57E	57E		IND		4/15/1971	0		NY	SUTHERLAND & SONS
173B	26129			5/13/1971	CAN	SPR	NW	NW	36 16N	57E	57E	0.5	MM		5/13/1971	362.01	AFA	WP	LEWIS, FRANK W.
173B	26129			5/13/1971	CAN	SPR	SW	SW	25 16N	57E	57E	0.5	MM		5/13/1971	362.01	AFA	WP	LEWIS, FRANK W.
173B	26137		10518	5/19/1971	CER	UG	NE	SE	36 05N	55E	55E	2.01	IRR		5/19/1971	485.84	AFA	NY	CROSS L. RANCHES LLC
173B	26239		8779	7/30/1971	CER	UG	NW	NW	28 16N	57E	57E	0.029	MM		7/30/1971	5.3706	AFA	WP	BEMA GOLD (U.S.) INC.
173B	26433		9394	12/13/1971	ABR	UG	SE	SE	33 05N	55E	55E		IRR		12/13/1971	0	AFA	NY	GIBSON, M. DEAN
173B	26433	CHANGED BY:	57465		PER	UG													
173B	26434		9396	12/13/1971	CER	UG	NW	SW	27 05N	55E	55E	5.4	IRR		12/13/1971	1280	AFA	NY	CB DEVELOPMENT
173B	26435		9395	12/13/1971	ABR	UG	NW	NW	33 05N	55E	55E		IRR		12/13/1971	0	AFA	NY	GIBSON, M. DEAN
173B	26435	CHANGED BY:	57465		PER	UG													
173B	26460	25199		1/14/1972	CAN	UG	NW	NW	27 06N	56E	56E		IRR		8/5/1969	0		NY	CASEY, INGER M.
173B	2669			3/29/1913	WDR	SPR	SE	SW	33 15N	57E	57E		IRR		3/29/1913	0	AFS	WP	ROSEVEAR, BESSIE
173B	2672		323	3/31/1913	CER	SPR	NE	SE	26 16N	57E	57E	0.003	MM		3/31/1913	2.1789	AFA	WP	WALKER, CHARLES A.
173B	26888			8/10/1972	CAN	STR	SW	NE	23 11N	56E	56E	5.4	ISTO		8/10/1972	826.67	AFA	NY	NORMA J. BRADSHAW (40%), KARL TODD BRADSHAW (UNDIV. 20%), JODY MAE BRADSHAW (UNDIV. 20%), NORMA J.



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Basin	App	Change App.	Cert	File Date	Status <sup>1</sup>	Source <sup>2</sup>	POD QQ	POD Qtr	POD Sec	POD Twn	POD Rng	Div Rate (CFS)	Type of Use	Sup	Priority Date	Annual Duty	Units <sup>3</sup>	County	Owner of Record
173B	27064		8820	10/12/1972	CER	UG	NW	SW	13 10N	57E	2 1RR				10/12/1972	600 AFA	NY	REYNOLDS, JACKIE S	
173B	27065		8821	10/12/1972	CER	UG	NE	NW	13 10N	57E	1 1RR				10/12/1972	280 AFA	NY	MCELROY, HARLAN AND KATHY	
173B	27217		10519	1/3/1973	CER	UG	SE	SE	34 05N	55E	4 7 1RR				1/3/1973	1280 AFA	NY	CROSS L RANCHES, LLC	
173B	27377		9372	3/28/1973	CER	UG	SW	NW	27 05N	55E	5 4 1RR				3/28/1973	1280 AFA	NY	CB DEVELOPMENT	
173B	27491		10760	5/29/1973	CER	UG	NW	NE	12 09N	57E	2 62 1RR				5/29/1973	638 68 AFA	NY	HENRY, C J AND LYNN, ANDREA	
173B	27491	CHANGED BY:	40758		WDR	UG													WILLOW CREEK GOLD MINING CO. OF NV
173B	2791		408	9/26/1913	CER	STR	NW	NE	20 04N	56E	0 25 MM				9/26/1913	0 AFA	NY	WILLOW CREEK GOLD MINING CO. OF NEV.	
173B	2793			9/29/1913	CAN	STR	NW	SE	18 04N	56E	0 MM				9/29/1913	0 AFA	NY	CROSS L RANCHES LLC	
173B	28626			8/20/1974	PER	UG	SW	NW	27 06N	56E	0 016 STK				8/20/1974	11 201 AFA	NY	CROSS L RANCHES, LLC	
173B	28627			8/20/1974	PER	UG	NW	NE	27 06N	56E	1 1RR				8/20/1974	160 AFA	NY	CROSS L RANCHES, LLC	
173B	28911		9791	11/14/1974	CER	UG	NW	NE	32 04N	53E	0 025 STK				11/14/1974	13 442 AFA	NY	HELEN FALLINI LIVING TRUST & FALLINI 1983	
173B	2902		287	3/5/1914	CER	SPR	NW	SW	30 03N	55E	0 025 STK				3/5/1914	11 201 AFA	NY	CROSS L RANCHES, LLC	
173B	2902	CHANGED BY:	11787		DEN	SPR													
173B	29123		8792	1/6/1975	CER	STR	NE	SW	21 12N	56E	0 015 STK				4/16/1951	5 1864 AFA	NY	HALSTEAD FORSGREN RANCHES	
173B	29232		10602	2/20/1975	CER	RES	SE	NW	3 03N	52E	0 STK				2/20/1975	23 508 AFA	NY	HELEN FALLINI LIVING TRUST & FALLINI 1983	
173B	29612			8/28/1975	CAN	UG	NW	NW	24 06N	57E	1 4 1RR				8/28/1975	320 AFA	NY	TAYLOR, MIRIAM	
173B	29613			8/28/1975	CAN	UG	NW	NE	19 04N	55E	2 7 1RR				8/28/1975	640 AFA	NY	SHARP, MELVIN	
173B	30279	DDUCKWCR		5/25/1976	WDR	STR	SW	SW	34 12N	56E	2 1RR							NY	HALSTEAD-FORSGREN RANCHES, INC.
173B	3058			7/29/1914	CAN	STR	SW	SE	12 04N	55E	0 1RR				7/29/1914	0	NY	REISCHKE, HERMAN	
173B	3066			8/3/1914	CAN	SPR	SW	SW	14 11N	58E	3 1RR				8/3/1914		NY	MUNSON, C.S	
173B	30978			1/3/1977	DEN	UG	NW	NW	32 10N	57E	0 1RC				1/3/1977	0	NY	LYNN, JEFFREY A.	
173B	31188		10630	3/16/1977	CER	UG	SE	SW	23 09N	56E	0 1 IND				3/16/1977	16 112 AFA	NY	MAKOIL, INC.	
173B	31254			3/29/1977	CAN	SPR	SW	NE	20 16N	58E	0 MM				3/29/1977	0 AFA	WP	LEWIS, FRANK W.	
173B	31255			3/29/1977	CAN	SPR	SW	SE	17 16N	58E	0 MM				3/29/1977	0 AFA	WP	LEWIS, FRANK W.	
173B	31323			4/13/1977	WDR	UG	NW	SE	31 10N	57E	0 1RR				4/13/1977	0 AFA	NY	MANZONIE, ADELLIE	
173B	31372		12846	4/25/1977	CER	UG	SW	SE	32 07N	57E	0 08 1RR				4/25/1977	57 91 AFA	NY	CROSS L RANCHES LLC	
173B	31424			5/3/1977	ABR	UG	NW	NE	36 05N	54E	0 1RD				5/3/1977	0 AFA	NY	CONNEALY, MARY ANN	
173B	31424	CHANGED BY:	48346		DEN	UG													
173B	31424	CHANGED BY:	48347		CAN	UG													
173B	31425			5/3/1977	ABR	UG	NE	NW	2 04N	54E	0 1RD				5/3/1977	0	NY	PEDDICORD, JUDITH A	
173B	31425	CHANGED BY:	48349		CAN	UG													
173B	31425	CHANGED BY:	48348		CAN	UG													
173B	31426			5/3/1977	ABR	UG	NE	NW	35 05N	54E	0 1RD				5/3/1977	0	NY	PEDDICORD, T JEAN	
173B	31426	CHANGED BY:	48350		CAN	UG													
173B	31426	CHANGED BY:	48351		CAN	UG													
173B	31427			5/3/1977	ABR	UG	NE	NW	11 04N	54E	0 1RD				5/3/1977	0 AFA	NY	DIERCKS, REBECCA	
173B	31427	CHANGED BY:	48352		CAN	UG													
173B	31427	CHANGED BY:	48353		CAN	UG													
173B	31428			5/3/1977	CAN	UG													
173B	31429			5/3/1977	CAN	UG	NW	SE	26 05N	54E	0 1RR				5/3/1977	0	NY	LAST CHANCE MINING COMPANY, INC.	
173B	31429	CHANGED BY:	48354		DEN	UG	NW	NE	1 04N	54E	0 1RD				5/3/1977	0 AFA	NY	PEDDICORD, STEVEN L	
173B	31429	CHANGED BY:	48355		CAN	UG													
173B	31430			5/3/1977	DEN	UG													
173B	31430	CHANGED BY:	48356		DEN	UG	NW	NE	12 04N	54E	0 1RD				5/3/1977	0	NY	BRADSHAW, WARREN	
173B	31430	CHANGED BY:	48357		DEN	UG													
173B	31431			5/3/1977	DEN	UG	NW	NE	24 04N	54E	0 1RD				5/3/1977	0	NY	KOEHLER, JEAN ANN	
173B	31431	CHANGED BY:	48359		DEN	UG													
173B	31431	CHANGED BY:	48358		DEN	UG													
173B	31432			5/3/1977	DEN	UG	NW	NE	8 04N	55E	10 8 1RD				5/3/1977	2560 AFA	NY	HOCKERSMITH, R.-CENTRAL NV WATER CO	
173B	31433			5/3/1977	DEN	UG	NW	NE	14 04N	54E	0 1RD				5/3/1977	0	NY	LISSOLO, JANET	
173B	31433	CHANGED BY:	48360		WDR	UG													
173B	31433	CHANGED BY:	48361		WDR	UG													
173B	31434			5/3/1977	ABR	UG	NW	NE	13 04N	54E	0 1RD				5/3/1977	0 AFA	NY	CONNEALY, MARY ANN	
173B	31434	CHANGED BY:	48362		CAN	UG													
173B	31434	CHANGED BY:	48363		CAN	UG													
173B	31435			5/3/1977	DEN	UG	NW	NE	5 04N	55E	10 8 1RD				5/3/1977	2560 AFA	NY	LISSOLO, LEONARD F	
173B	31435	CHANGED BY:	48365		DEN	UG													



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173B	31435	CHANGED BY:	48364		DEN	UG	NE	NW		6 04N	55E	0 IRD			5/3/1977	0	AFA	NY	DIERCKS, FRANK D
173B	31436			5/3/1977	ABR	UG													
173B	31436	CHANGED BY:	48367		CAN	UG													
173B	31436	CHANGED BY:	48366		CAN	UG													TENABO GOLD MINING CO. INC.
173B	31437			5/3/1977	DEN	UG	NE	NW	7 04N	55E		0 IRD			5/3/1977	0		NY	
173B	31437	CHANGED BY:	48369		WDR	UG													
173B	31437	CHANGED BY:	48368		WDR	UG													
173B	31438			5/3/1977	DEN	UG	NE	NW	23 04N	54E		10.8 IRD			5/3/1977	2560	AFA	NY	HOCKERSMITH, R.-CENTRAL NV WATER CO
173B	31438	CHANGED BY:	48502		DEN	UG													
173B	31439			5/3/1977	DEN	UG	NW	NE	13 05N	54E		10.8 IRC			5/3/1977	2560	AFA	NY	GREAT BASIN LAND COMPANY, INC.
173B	31440			5/3/1977	DEN	UG	NE	NW	11 05N	54E		10.8 IRC			5/3/1977	2560	AFA	NY	GREAT BASIN LAND COMPANY, INC.
173B	31441			5/3/1977	DEN	UG	NW	NE	25 05N	54E		10.8 IRC			5/3/1977	2560	AFA	NY	GREAT BASIN LAND COMPANY, INC.
173B	31442			5/3/1977	DEN	UG	NW	NE	24 05N	54E		10.8 IRC			5/3/1977	2560	AFA	NY	GREAT BASIN LAND COMPANY, INC.
173B	31443			5/3/1977	DEN	UG	NE	NW	14 05N	54E		10.8 IRC			5/3/1977	2560	AFA	NY	GREAT BASIN LAND COMPANY, INC.
173B	31444			5/3/1977	DEN	UG	NW	NE	12 05N	54E		10.8 IRC			5/3/1977	2560	AFA	NY	GREAT BASIN LAND COMPANY, INC.
173B	31444	CHANGED BY:	48046		CAN	UG													
173B	31444	CHANGED BY:	48048		CAN	UG													
173B	31444	CHANGED BY:	48047		CAN	UG													
173B	31444	CHANGED BY:	48049		CAN	UG													
173B	31445			5/3/1977	DEN	UG	NE	NW	23 05N	54E		10.8 IRC			5/3/1977	2560	AFA	NY	GREAT BASIN LAND COMPANY, INC.
173B	31446			5/3/1977	DEN	UG	NE	NW	19 05N	55E		0 IRR			5/3/1977	0		NY	NUGGET MINING CO. INC.
173B	31447			5/3/1977	DEN	UG	NW	NE	32 05N	55E		0 IRR			5/3/1977	0		NY	NUGGET MINING CO. INC.
173B	31448			5/3/1977	DEN	UG	NW	NE	29 05N	55E		0 IRR			5/3/1977	0		NY	NUGGET MINING CO. INC.
173B	31449			5/3/1977	DEN	UG	NE	NW	31 05N	55E		0 IRR			5/3/1977	0		NY	NUGGET MINING CO. INC.
173B	31450			5/3/1977	DEN	UG	NE	NW	18 05N	55E		10.8 IRD			5/3/1977	2560	AFA	NY	GREAT BASIN LAND COMPANY, INC.
173B	31451			5/3/1977	DEN	UG	NW	NE	17 05N	55E		10.8 IRD			5/3/1977	2560	AFA	NY	GREAT BASIN LAND COMPANY, INC.
173B	31452			5/3/1977	DEN	UG	NW	NE	20 05N	55E		0 IRD			5/3/1977	0		NY	NUGGET MINING CO. INC.
173B	31453			5/3/1977	DEN	UG	NE	NW	30 05N	55E		0 IRR			5/3/1977	0		NY	NUGGET MINING CO. INC.
173B	31891			6/1/1977	CAN	UG		SW	7 08N	56E		2.7 IRC			6/1/1977	640	AFA	NY	COOPER, JAMES R.
173B	31892			6/1/1977	CAN	UG		NW	7 08N	56E		0 IRC			6/1/1977	0	AFA	NY	COOPER, GLORIA J.
173B	31893			6/1/1977	CAN	UG		SW	6 08N	56E		2.7 IRC			6/1/1977	640	AFA	NY	FRY, MICHAEL F.
173B	31894			6/1/1977	CAN	UG	SE		6 08N	56E		0 IRC			6/1/1977	0	AFA	NY	FRY, PAUL J. III
173B	31895			6/1/1977	CAN	UG		NW	6 08N	56E		0 IRC			6/1/1977	0	AFA	NY	FRY, DOLORES LILLIAN
173B	31896			6/1/1977	CAN	UG		NE	6 08N	56E		0 IRC			6/1/1977	0	AFA	NY	FRY, PAUL J. M.D.
173B	31906			6/2/1977	CAN	UG	NW	NE	29 11N	57E		0 IRC			6/2/1977	0		NY	CHACHAS, GREGORY J.
173B	31907			6/2/1977	CAN	UG	NW	NE	30 11N	57E		0 IRR			6/2/1977	0		NY	CHACHAS, GREGORY J.
173B	31908			6/2/1977	CAN	UG	NW	SE	31 11N	57E		0 IRR			6/2/1977	0		NY	CHACHAS, GREGORY J.
173B	31909			6/2/1977	CAN	UG	NW	NE	32 11N	57E		0 IRR			6/2/1977	0		NY	CHACHAS, GREGORY J.
173B	31910			6/2/1977	CAN	UG	NW	SE	20 11N	57E		0 IRR			6/2/1977	0		NY	CHACHAS, GREGORY J.
173B	31911			6/2/1977	CAN	UG	NW	SE	19 11N	57E		0 IRR			6/2/1977	0		NY	CHACHAS, GREGORY J.
173B	31912			6/2/1977	CAN	UG	NW	SE	18 11N	57E		0 IRR			6/2/1977	0		NY	CHACHAS, GREGORY J.
173B	31913			6/2/1977	CAN	UG	NW	SE	17 11N	57E		0 IRR			6/2/1977	0		NY	CHACHAS, GREGORY J.
173B	31914			6/2/1977	CAN	UG	NW	SE	7 11N	57E		0 IRR			6/2/1977	0		NY	CHACHAS, GREGORY J.
173B	31915			6/2/1977	CAN	UG	NW	NE	6 10N	57E		0 IRC			6/2/1977	0	AFA	NY	CHACHAS, GREGORY J.
173B	31933		10340	6/3/1977	CER	SPR	SW	NE	3 15N	58E		0.015 STK			6/3/1977	4.2044	AFA	WP	HALSTEAD-FORSOREN RANCHES, INC.
173B	31934		10341	6/3/1977	CER	SPR	SW	NE	3 15N	58E		0.015 STK			6/3/1977	4.2044	AFA	WP	HALSTEAD-FORSOREN RANCHES, INC.
173B	32026			6/13/1977	DEN	UG	NE	NE	14 10N	57E		0 IRC			6/13/1977	0	AFA	NY	JACKSON, ALBERT S
173B	32027			6/13/1977	DEN	UG	SW	NE	14 10N	57E		0 IRC			6/13/1977	0	AFA	NY	JACKSON, AVA MARIE
173B	32028			6/13/1977	DEN	UG	NW	SE	14 10N	57E		0 IRC			6/13/1977	0	AFA	NY	JACKSON, MERLIN
173B	32029			6/13/1977	DEN	UG	SW	SE	14 10N	57E		2.7 IRC			6/13/1977	640	AFA	NY	JACKSON, CARLTONE E
173B	32048			6/13/1977	DEN	UG	NW	NW	5 08N	56E		0 IRC			6/13/1977	0	AFA	NY	WHITELY, JAMES S.
173B	32049			6/13/1977	DEN	UG	NE	SE	5 08N	56E		0 IRC			6/13/1977	0	AFA	NY	WHITELY, LINDA
173B	32050			6/13/1977	DEN	UG	NW	SW	5 08N	56E		0 IRC			6/13/1977	0	AFA	NY	WHITELY, PAT
173B	32051			6/13/1977	DEN	UG	NE	NE	5 08N	56E		0 IRC			6/13/1977	0	AFA	NY	WHITELY, KAREN
173B	32052			6/13/1977	DEN	UG	NW	SW	32 09N	56E		0 IRC			6/13/1977	0	AFA	NY	LONG, ROBERT L.
173B	32053			6/13/1977	DEN	UG	NE	SE	32 09N	56E		0 IRC			6/13/1977	0	AFA	NY	LONG, PATRICIA A.
173B	32054			6/13/1977	DEN	UG	NE	NE	8 08N	56E		0 IRR			6/13/1977	0		NY	SINGLER, RONALD M.



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173B	32055			6/13/1977	DEN	UG	NE	NE	32 09N	56E	56E	0 IRC	0 IRC		6/13/1977	0		NY	SINGLER, GAYLE LYNN
173B	32240			6/23/1977	WDR	UG	NE	NE	1 10N	56E	56E	0 IRC	0 IRC		6/23/1977	0		NY	FLYING DIAMOND RANCHES INC.
173B	32241			6/23/1977	DEN	UG	SW	NE	1 10N	57E	57E	10.8 IRC	10.8 IRC		6/23/1977	2560 AFA	0 AFA	NY	GREAT BASIN HOLDING CO., INC.
173B	32242			6/23/1977	DEN	UG	SW	NE	2 10N	57E	57E	10.8 IRC	10.8 IRC		6/23/1977	2560 AFA	0 AFA	NY	GREAT BASIN HOLDING CO., INC.
173B	32243			6/23/1977	WDR	UG	NE	NE	3 10N	57E	57E	0 IRC	0 IRC		6/23/1977	0 AFA	0 AFA	NY	FLYING DIAMOND RANCHES INC.
173B	32244			6/23/1977	WDR	UG	NE	NE	4 10N	57E	57E	0 IRC	0 IRC		6/23/1977	0 AFA	0 AFA	NY	FLYING DIAMOND RANCHES INC.
173B	32245			6/23/1977	WDR	UG	NE	NE	5 10N	57E	57E	0 IRC	0 IRC		6/23/1977	0 AFA	0 AFA	NY	FLYING DIAMOND RANCHES INC.
173B	32246			6/23/1977	WDR	UG	NE	NE	6 10N	57E	57E	0 IRC	0 IRC		6/23/1977	0 AFA	0 AFA	NY	FLYING DIAMOND RANCHES INC.
173B	32247			6/23/1977	WDR	UG	NE	NE	13 11N	56E	56E	10.8 IRC	10.8 IRC		6/23/1977	0		NY	FLYING DIAMOND RANCHES INC.
173B	32248			6/23/1977	WDR	UG	NE	NE	24 11N	56E	56E	10.8 IRC	10.8 IRC		6/23/1977	0		NY	FLYING DIAMOND RANCHES INC.
173B	32249			6/23/1977	WDR	UG	NE	NE	25 11N	56E	56E	10.8 IRC	10.8 IRC		6/23/1977	0		NY	FLYING DIAMOND RANCHES INC.
173B	32250			6/23/1977	WDR	UG	NE	NE	36 11N	56E	57E	10.8 IRC	10.8 IRC		6/23/1977	0		NY	FLYING DIAMOND RANCHES INC.
173B	32251			6/23/1977	DEN	UG	SW	SW	16 11N	57E	57E	2.7 IRC	2.7 IRC		6/23/1977	640 AFA	0 AFA	NY	GREAT BASIN HOLDING CO., INC.
173B	32252			6/23/1977	WDR	UG	NE	NE	17 11N	57E	57E	0 IRC	0 IRC		6/23/1977	0		NY	FLYING DIAMOND RANCHES INC.
173B	32253			6/23/1977	WDR	UG	NE	NE	18 11N	57E	57E	0 IRC	0 IRC		6/23/1977	0 AFA	0 AFA	NY	FLYING DIAMOND RANCHES INC.
173B	32254			6/23/1977	WDR	UG	NE	NE	19 11N	57E	57E	0 IRC	0 IRC		6/23/1977	0 AFA	0 AFA	NY	FLYING DIAMOND RANCHES INC.
173B	32255			6/23/1977	WDR	UG	NE	NE	20 11N	57E	57E	0 IRC	0 IRC		6/23/1977	0 AFA	0 AFA	NY	FLYING DIAMOND RANCHES INC.
173B	32256			6/23/1977	DEN	UG	SW	NE	21 11N	57E	57E	10.8 IRC	10.8 IRC		6/23/1977	2560 AFA	0 AFA	NY	GREAT BASIN HOLDING CO., INC.
173B	32257			6/23/1977	DEN	UG	SW	SW	22 11N	57E	57E	2.7 IRC	2.7 IRC		6/23/1977	640 AFA	0 AFA	NY	GREAT BASIN HOLDING CO., INC.
173B	32258			6/23/1977	DEN	UG	SW	SW	26 11N	57E	57E	2.7 IRC	2.7 IRC		6/23/1977	640 AFA	0 AFA	NY	GREAT BASIN HOLDING CO., INC.
173B	32259			6/23/1977	DEN	UG	SW	NE	27 11N	57E	57E	10.8 IRC	10.8 IRC		6/23/1977	2560 AFA	0 AFA	NY	GREAT BASIN HOLDING CO., INC.
173B	32260			6/23/1977	DEN	UG	SW	NE	28 11N	57E	57E	10.8 IRC	10.8 IRC		6/23/1977	2560 AFA	0 AFA	NY	GREAT BASIN HOLDING CO., INC.
173B	32261			6/23/1977	WDR	UG	NE	NE	29 11N	57E	57E	0 IRC	0 IRC		6/23/1977	0 AFA	0 AFA	NY	FLYING DIAMOND RANCHES INC.
173B	32262			6/23/1977	WDR	UG	NE	NE	30 11N	57E	57E	0 IRC	0 IRC		6/23/1977	0 AFA	0 AFA	NY	FLYING DIAMOND RANCHES INC.
173B	32263			6/23/1977	WDR	UG	NE	NE	31 11N	57E	57E	0 IRC	0 IRC		6/23/1977	0 AFA	0 AFA	NY	FLYING DIAMOND RANCHES INC.
173B	32264			6/23/1977	WDR	UG	NE	NE	32 11N	57E	57E	0 IRC	0 IRC		6/23/1977	0		NY	FLYING DIAMOND RANCHES INC.
173B	32265			6/23/1977	DEN	UG	SW	NE	33 11N	57E	57E	10.8 IRC	10.8 IRC		6/23/1977	2560 AFA	0 AFA	NY	GREAT BASIN HOLDING CO., INC.
173B	32266			6/23/1977	DEN	UG	SW	NE	34 11N	57E	57E	10.8 IRC	10.8 IRC		6/23/1977	2560 AFA	0 AFA	NY	GREAT BASIN HOLDING CO., INC.
173B	32267			6/23/1977	DEN	UG	SW	NE	35 11N	57E	57E	10.8 IRC	10.8 IRC		6/23/1977	2560 AFA	0 AFA	NY	GREAT BASIN HOLDING CO., INC.
173B	32268			6/23/1977	DEN	UG	NE	SW	9 10N	57E	57E	0 IRC	0 IRC		6/23/1977	0 AFA	0 AFA	NY	HANKS, CAROLE K.
173B	32269			6/23/1977	DEN	UG	NE	NW	16 10N	57E	57E	0 IRC	0 IRC		6/23/1977	0		NY	HANKS, CARL J.
173B	32318	CHANGED BY:	13193 83035T	6/27/1977	ABR	UG	NW	NW	32 11N	58E	58E	0 IRD	0 IRD		6/27/1977	0 AFA	0 AFA	NY	DAVID WEAVER
173B	32318				PER	UG													
173B	32319	CHANGED BY:	52169	6/27/1977	ABR	UG	SW	NE	31 11N	58E	58E	0 IRC	0 IRC		6/27/1977	0 AFA	0 AFA	NY	LANI, DONALD
173B	32319				CAN	UG													
173B	32588			6/30/1977	DEN	UG	NW	NE	1 08N	55E	55E	2.7 IRC	2.7 IRC		6/30/1977	640 AFA	0 AFA	NY	WHITELY, JANE ANNE
173B	32589			6/30/1977	DEN	UG	NW	SE	1 08N	55E	55E	2.7 IRC	2.7 IRC		6/30/1977	640 AFA	0 AFA	NY	TRUDEAU, ROBERT MICHAEL
173B	32668			7/5/1977	DEN	UG	NW	SE	31 10N	57E	57E	0 IRC	0 IRC		7/5/1977	0		NY	MANZONIE, GAILIN
173B	32669			7/5/1977	DEN	UG		LT01	6 09N	57E	57E	2.7 IRR	2.7 IRR		7/5/1977	640 AFA	0 AFA	NY	MANZONIE, DENNY
173B	32670			7/5/1977	DEN	UG	NE	SW	6 10N	58E	58E	0 IRC	0 IRC		7/5/1977	0 AFA	0 AFA	NY	PEACOCK, THOMAS WADE
173B	32671			7/5/1977	DEN	UG	NE	SW	6 10N	58E	58E	0 IRC	0 IRC		7/5/1977	0 AFA	0 AFA	NY	PEACOCK, RUE DENISE
173B	32814			7/15/1977	WDR	UG	SE	SW	23 10N	57E	57E	0 IRC	0 IRC		7/15/1977	0		NY	CARPENTER, WANDA J.
173B	32815			7/15/1977	WDR	UG	NE	NW	23 10N	57E	57E	2.7 IRC	2.7 IRC		7/15/1977	0		NY	CARPENTER, DEAN EDWARD
173B	32988			8/1/1977	DEN	UG		LT01	3 10N	57E	57E	10.67 IRC	10.67 IRC		8/1/1977	2560 AFA	0 AFA	NY	JOHNSON, BUCK & HOFMAN, CARLIN
173B	32989			8/1/1977	DEN	UG		LT01	4 10N	57E	57E	10.67 IRC	10.67 IRC		8/1/1977	2560 AFA	0 AFA	NY	JOHNSON, BUCK & HOFMAN, CARLIN
173B	32990			8/1/1977	DEN	UG		LT01	5 10N	57E	57E	10.67 IRC	10.67 IRC		8/1/1977	2560 AFA	0 AFA	NY	JOHNSON, BUCK & HOFMAN, CARLIN
173B	32991			8/1/1977	DEN	UG	NE	NE	9 10N	57E	57E	5.4 IRC	5.4 IRC		8/1/1977	1280 AFA	0 AFA	NY	JOHNSON, BUCK & HOFMAN, CARLIN
173B	32992	CHANGED BY:	53172	8/1/1977	ABR	UG	NE	NE	8 10N	57E	57E	0 IRC	0 IRC		8/1/1977	0 AFA	0 AFA	NY	NEVADA SETTLERS ASSN
173B	32992				CAN	UG													
173B	32993			8/1/1977	DEN	UG	NE	NE	7 10N	57E	57E	10.67 IRC	10.67 IRC		8/1/1977	2560 AFA	0 AFA	NY	JOHNSON, BUCK & HOFMAN, CARLIN
173B	32994			8/1/1977	CAN	UG	NE	NE	12 10N	56E	56E	5.4 IRC	5.4 IRC		8/1/1977	1280 AFA	0 AFA	NY	NEVADA SETTLERS ASSN
173B	32995			8/1/1977	DEN	UG	NE	NE	17 10N	57E	57E	8 IRC	8 IRC		8/1/1977	1920 AFA	0 AFA	NY	JOHNSON, BUCK & HOFMAN, CARLIN
173B	32996			8/1/1977	DEN	UG	NE	NE	18 10N	57E	57E	10.67 IRC	10.67 IRC		8/1/1977	2560 AFA	0 AFA	NY	JOHNSON, BUCK & HOFMAN, CARLIN
173B	32997	CHANGED BY:	53171	8/1/1977	ABR	UG	NE	NE	19 10N	57E	57E	0 IRC	0 IRC		8/1/1977	0 AFA	0 AFA	NY	NEVADA SETTLERS ASSN
173B	32997				CAN	UG													
173B	32998			8/1/1977	DEN	UG		LT05	30 10N	57E	57E	0 IRC	0 IRC		8/1/1977	0 AFA	0 AFA	NY	NEVADA SETTLERS ASSN
173B	33060			8/8/1977	DEN	UG	SW	SE	35 05N	55E	55E	2.7 IRC	2.7 IRC		8/8/1977	640 AFA	0 AFA	NY	SHARP, GERALD H.



Basin	App	Change App.	Cert	File Date	Status <sup>1</sup>	Source <sup>2</sup>	POD QQ	POD Qtr	POD Sec	POD Twn	POD Rng	Div Rate (CFS)	Type of Use	Sup	Priority Date	Annual Duty	Units <sup>3</sup>	County	Owner of Record
173B	33061			8/8/1977	ABR	UG	NE	SE	36 05N	55E			0 IRC				0 AFA	NY	SHARP, GERALD HOWARD
173B	33061	CHANGED BY:	64062		ABR	UG													
173B	33107			8/10/1977	DEN	UG	NE	NE	12 09N	57E		2.7 IRC					640 AFA	NY	WALLER, MARCELLA G
173B	33108			8/10/1977	DEN	UG		LT01	1 09N	57E		2.7 IRC					640 AFA	NY	WALLER, ROBERT A
173B	33109			8/10/1977	DEN	UG	NW	SE	12 09N	57E		2.7 IRC					640 AFA	NY	HALSTEAD, FRANK
173B	33110			8/10/1977	DEN	UG	SE	SE	36 10N	57E		2.7 IRC					640 AFA	NY	MAKLEY, RICHARD A.
173B	33225			8/19/1977	CAN	UG	NE	NW	26 05N	54E		0 IRD					0 AFA	NY	LAST CHANCE MINING CO. INC.
173B	33581			9/12/1977	DEN	UG	NE	SW	33 08N	56E		2.7 IRC					600 AFA	NY	DEAN, WESLEY GLENN
173B	33582			9/12/1977	DEN	UG	NE	NW	33 08N	56E		2.7 IRC					560 AFA	NY	DEAN, LILLIE JOE
173B	34376			10/25/1977	DEN	UG	NW	NW	6 08N	56E		0 IRC					0 AFA	NY	FRY, PAUL JOSEPH (M.D.)
173B	34377			10/25/1977	DEN	UG	NW	NW	6 08N	56E		0 IRC					0 AFA	NY	FRY, DOLORES LILLIAN
173B	34378			10/25/1977	DEN	UG	NW	SE	6 08N	56E		0 IRC					0 AFA	NY	FRY, PAUL JOSEPH III
173B	34379			10/25/1977	DEN	UG	NW	SW	6 08N	56E		0 IRC					0 AFA	NY	FRY, MICHAEL FRANCIS
173B	34380			10/25/1977	DEN	UG	NW	NW	7 08N	56E		2.7 IRC					640 AFA	NY	COOPER, GLORIA JEAN
173B	34381			10/25/1977	DEN	UG	NW	SW	7 08N	56E		2.7 IRC					640 AFA	NY	COOPER, JAMES RANDALL
173B	34392			10/25/1977	CAN	UG	SW	SW	34 08N	55E		2.7 IRR					600 AFA	NY	MILLER, ALFRED FRANCES
173B	34416			10/26/1977	DEN	UG	NW	NW	32 11N	57E		10.4 IRC					2560 AFA	NY	GREAT BASIN LAND COMPANY, INC.
173B	34417			10/26/1977	DEN	UG	NW	NW	31 11N	57E		0 IRC					0 AFA	NY	CLEVELAND RANCH INC
173B	34418			10/26/1977	DEN	UG	NW	NW	30 11N	57E		0 IRC					0 AFA	NY	CLEVELAND RANCH INC
173B	34419			10/26/1977	CAN	UG	NW	NW	17 11N	57E		0 IRC					0 AFA	NY	CLEVELAND RANCH INC.
173B	34420			10/26/1977	DEN	UG	NW	NW	18 11N	57E		10.4 IRC					2560 AFA	NY	GREAT BASIN LAND COMPANY, INC.
173B	34421			10/26/1977	DEN	UG	NW	NW	19 11N	57E		10.4 IRC					2560 AFA	NY	GREAT BASIN LAND COMPANY, INC.
173B	34422			10/26/1977	DEN	UG	NW	NW	8 11N	57E		10.4 IRC					2560 AFA	NY	GREAT BASIN LAND COMPANY, INC.
173B	34423			10/26/1977	DEN	UG	NW	NW	7 11N	57E		10.4 IRC					2560 AFA	NY	GREAT BASIN LAND COMPANY, INC.
173B	34424			10/26/1977	DEN	UG	NW	NW	20 11N	57E		10.4 IRC					2560 AFA	NY	GREAT BASIN LAND COMPANY, INC.
173B	34425			10/26/1977	DEN	UG	NW	NW	29 11N	57E		10.4 IRC					2560 AFA	NY	GREAT BASIN LAND COMPANY, INC.
173B	34471			11/1/1977	DEN	UG	NE	NE	22 10N	57E		0 IRC					0	NY	CARPENTER, DEAN EDWARD
173B	34472			11/1/1977	DEN	UG	SE	SE	22 10N	57E		0 IRC					0	NY	CARPENTER, WANDA J.
173B	34886			1/17/1978	WDR	UG		LT03	19 09N	57E		1 OTH					723.98 AFA	NY	NEVADA-DEPARTMENT OF TRANSPORTATION
173B	3585		2019	9/20/1915	CER	SPR	SW	SE	20 08N	37E		0.042 MM					30.41 AFA	NY	MINERAL COUNTY GOLD MINING
173B	36025			10/12/1978	ABR	UG	SE	SE	15 10N	57E		0 IRR					0 AFA	NY	HANKS, CARL J.
173B	36025	CHANGED BY:	58805		CER	UG													
173B	3647			10/22/1915	DEN	SPR	NE	NW	32 13N	56E		0 STK					0 AFA	NY	TOGNONI, J.C.
173B	3664			10/30/1915	DEN	UG	NE	NE	29 10N	57E		0 IRC					0 AFA	NY	RAILROAD VALLEY LAND AND WATER CO
173B	36700			2/12/1979	WDR	SPR	NE	SE	6 11N	58E		0 STK					0 AFA	NY	BLM
173B	36817			2/16/1979	DEN	UG		LT04	1 10N	56E		0 IRD					0	NY	BRADSHAW, NORMA J.
173B	36818			2/16/1979	DEN	UG	NW	SW	36 11N	56E		0 IRD					0 AFA	NY	BRADSHAW, BARRY K.
173B	36819			2/16/1979	DEN	UG	NW	NW	36 11N	56E		0 IRD					0 AFA	NY	BRADSHAW, BRADLEY R.
173B	36832			2/20/1979	DEN	UG	NW	SE	30 10N	57E		0 IRD					0 AFA	NY	LYNN, JEFFERY A
173B	37022			3/14/1979	DEN	STR	SW	NE	7 10N	58E		0 IRD					0	NY	GUSTAFSON, DEIL O.
173B	37023			3/14/1979	CAN	UG	NW	SE	7 10N	58E		0 IRD					0 AFA	NY	GUSTAFSON, DEIL O
173B	37024			3/14/1979	DEN	STR	SW	NW	8 10N	58E		0 IRD					0 AFA	NY	FERROZZO, JAMES
173B	37025			3/14/1979	DEN	UG	NW	NW	8 10N	58E		0 IRD					0	NY	FERROZZO, JAMES
173B	37250			3/27/1979	DEN	UG	NW	NE	6 10N	58E		0 IRD					0	NY	LANI, DONA LEE
173B	37452			3/30/1979	CAN	UG	NE	NE	14 10N	57E		0 IRD					0 AFS	NY	LEAVY, JAMES R.
173B	37453			3/30/1979	CAN	UG		LT10	6 14N	57E		0 IRD					0	WP	WARD, JO B.
173B	37454			3/30/1979	CAN	UG	NE	NW	14 10N	57E		5.4 IRD						NY	ZIMBELMAN, EDWARD J.
173B	37455			3/30/1979	CAN	UG	NE	NE	31 15N	57E		0 IRD					0	WP	WARD, GENE R.
173B	37456			3/30/1979	CAN	UG	NE	NW	31 15N	57E		0 IRD					0	WP	WARD, G. KAREN
173B	37457			3/30/1979	CAN	UG	NE	NW	32 15N	57E		0 IRD					0	WP	WARD, CLAYTON D.
173B	37459			3/30/1979	CAN	UG	NE	NE	22 10N	57E		0 IRD					0	NY	SCOTT, JAMES W.
173B	37496			4/2/1979	DEN	UG	NW	SE	28 05N	55E		0 IRR					0	NY	PETERSON, REDGE E
173B	37542			4/2/1979	DEN	UG	SE	NE	30 05N	55E		0 IRD					0	NY	THORNE, M.F.
173B	37548			4/2/1979	DEN	UG	NW	SE	20 05N	55E		0 IRD					0	NY	THORNE, DEBORAH S.
173B	37557			4/2/1979	DEN	UG	NW	SE	11 10N	56E		0 IRD					0	NY	BRADSHAW, ANN C.
173B	37558			4/2/1979	DEN	UG	SE	SW	1 10N	56E		0 IRD					0	NY	BRADSHAW, GORDON L.
173B	37708			4/5/1979	CAN	UG	SE	NE	1 14N	56E		0 IRD					0	WP	WHITE, HAROLD L.



## Nevada Division of Water Rights Database, Hydrographic Abstract Advanced Search, Basin 173B Railroad Valley/Northern Part

Basin	App	Change App.	Cert	File Date	Status <sup>1</sup>	Source <sup>2</sup>	POD QQ	POD Qtr	POD Sec	POD Twn	POD Rng	Div Rate (CFS)	Type of Use	Sup	Priority Date	Annual Duty	Units <sup>3</sup>	County	Owner of Record
173B	37742			4/6/1979	DEN	UG	NW	SE	11	10N	57E		0 IRD		4/6/1979	0		NY	GUALCO, PATRICIA
173B	37743			4/6/1979	DEN	UG	NE	NE	11	10N	57E		0 IRD		4/6/1979	0		NY	GUALCO, PATRICIA
173B	37744			4/6/1979	DEN	UG	NE	SW	13	10N	57E		0 IRD		4/6/1979	0		NY	GUALCO, PATRICIA
173B	37745			4/6/1979	DEN	STR	SW	SW	1	10N	57E		0 IRD		4/6/1979	0		NY	GUALCO, PATRICIA
173B	37763			4/9/1979	CAN	UG	SW	NE	21	05N	55E		0 IRD		4/9/1979	0		NY	KINKEAD, JAMES E.
173B	37766			4/9/1979	CAN	UG	SW	NE	22	05N	55E		0 IRD		4/9/1979	0		NY	BIRRELL, NAYDA L.
173B	37768			4/9/1979	DEN	UG	NW	NE	29	05N	55E		0 IRD		4/9/1979	0		NY	WINTER, CARL WM.
173B	37769			4/9/1979	DEN	UG	NW	SE	29	05N	55E		0 IRD		4/9/1979	0		NY	WINTER, JERI
173B	37773			4/9/1979	CAN	UG	SW	NW	21	05N	55E		0 IRD		4/9/1979	0		NY	KINKEAD, HELENA
173B	37774			4/9/1979	DEN	UG	NE	NW	23	05N	55E	6.4	IRD		4/9/1979	1280	AFA	NY	STEWART, HAROLD A
173B	37777			4/9/1979	CAN	UG	SW	NW	22	05N	55E		0 IRD		4/9/1979	0		NY	BIRRELL, PETER R.
173B	38565		10929	7/16/1979	CER	UG	NW	NE	12	09N	57E	2.62	IRR		7/16/1979	640.92	AFA	NY	HAMRICK, STEVE & LIBBIE
173B	39893		17643	12/5/1979	CER	UG	NE	SW	28	05N	55E	5.27	IRR	Y	12/5/1979	1208	AFA	NY	CB DEVELOPMENT LC
173B	39894		13194	12/5/1979	CER	UG	SW	SW	28	05N	55E	5.8	IRR	Y	12/5/1979	1190.3	AFA	NY	BEVIS, KAREN SPROUSE
173B	39895			12/5/1979	PER	UG	NW	NW	32	05N	55E	6	IRR	Y	12/5/1979	2400	AFA	NY	SWARTZ, CHRISTOPHER P & BETH LOUANN
173B	40758	27491		2/27/1980	WDR	UG	SW	NE	12	09N	57E		0 IRR		5/29/1973	0	AFA	NY	LYNN, WILLIAM MORGAN
173B	4168			9/26/1916	WDR	STR	NW	SW	2	11N	56E	0.4	IRR		9/26/1916	0		NY	VANOVER, FRANK C.
173B	41740			7/14/1980	WDR	UG	SE	NW	17	10N	58E		0 QM		7/14/1980	0		NY	MX
173B	41743			7/14/1980	WDR	UG	NE	SE	2	03N	52E		0 QM		7/14/1980	0		NY	MX
173B	41744			7/14/1980	WDR	UG	SE	SE	33	08N	55E		0 QM		7/14/1980	0		NY	US GOVERNMENT
173B	4231			11/25/1916	CAN	STR	SW	SW	5	05N	57E		0 IRR		11/25/1916	0	AFS	NY	HUMPHREY REED LAND & CATTLE COMPANY
173B	4237			12/1/1916	CAN	SPR			08N	54E		0.025	DOM		12/1/1916	0		NY	TOGNOINI, J.C.
173B	4238			12/1/1916	CAN	SPR			16	07N	55E		0 MM		12/1/1916	0		NY	TOGNOINI, J.C.
173B	42918			12/5/1980	DEN	SPR	NW	SE	34	16N	57E	0.15	MM		12/5/1980			WP	GREAT WEST LAND AND MINING COMPANY
173B	42938			12/10/1980	DEN	SPR	SW	NE	20	16N	58E	0.03	MM		12/10/1980	0		WP	LEWIS, FRANK W.
173B	42939			12/10/1980	DEN	SPR	SW	SE	17	16N	58E	0.03	MM		12/10/1980	0		WP	LEWIS, FRANK W.
173B	43117			1/19/1981	CAN	UG			04N	56E		0 MM			1/19/1981	0		NY	MANZENITA MINING CORPORATION
173B	43455			4/3/1981	CAN	UG	NE	NW	33	10N	57E	0	IND		4/3/1981	0		NY	WEXPRO COMPANY
173B	4411			4/27/1917	WDR	SPR	NE	NE	3	15N	58E	1	MM		4/27/1917	0		WP	READ, WILLIAM M.
173B	44758			10/29/1981	ABR	UG	SE	SW	35	09N	58E	0	REC		10/29/1981	0	AFA	NY	BLM
173B	44758	CHANGED BY:	48445		CER	UG													
173B	44765		11350	10/29/1981	CER	UG	SE	NW	18	09N	58E	0.004	STK		10/29/1981	3.3451	AFA	NY	BLM
173B	44766			10/29/1981	WDR	UG	NE	NW	14	09N	56E	0	STK		10/29/1981	0	AFA	NY	BLM
173B	44770			10/29/1981	WDR	UG	SW	NE	35	06N	56E	0	STK		10/29/1981	0	AFA	NY	BLM
173B	44771			10/29/1981	DEN	UG	SW	SE	18	06N	56E	0.01	STK		10/29/1981	7.24	AFA	NY	BLM
173B	4511			7/14/1917	CAN	SPR	SW	SE	16	07N	55E	5	MM		7/14/1917			NY	TOGNOINI, J.C.
173B	4512		1143	7/14/1917	CER	SPR	SE	SW	34	08N	54E	0.025	DOM		7/14/1917	0	AFA	NY	J.C. TOGNOINI
173B	45247		11854	1/19/1982	CER	UG	SW	NE	2	03N	52E	0.018	STK		1/19/1982	13.043	AFA	NY	HELEN FALLINI LIVING TRUST & FALLINI 1983
173B	4526			7/26/1917	CAN	STR			04N	56E		1	MM		7/26/1917			NY	GOODMAN, J. HENRY
173B	4533			7/30/1917	PER	STR	NW	SE	3	03N	52E	0	IRR		7/30/1917	10000	AFA	NY	ALLERD, E.R.
173B	45362			2/22/1982	CAN	UG			21	09N	56E	0	IRD		2/22/1982	0		NY	CHRISTMAN, DALLIES
173B	45363			2/22/1982	CAN	UG			09N	56E		0	IRD		2/22/1982	0		NY	CHRISTMAN, CHARLES
173B	45364			2/22/1982	DEN	UG	SE	NE	2	09N	56E	0	IRD		2/22/1982	0	AFA	NY	LOGAN, RICHARD
173B	45365			2/22/1982	DEN	UG	NE	SW	2	09N	56E	3.2	IRD		2/22/1982	1280	AFA	NY	STEVENS, BRUCE
173B	45366			2/22/1982	DEN	UG	NE	SE	11	09N	56E	0	IRD		2/22/1982	0	AFA	NY	ZIMMERMAN, F.M.
173B	45367			2/22/1982	DEN	UG	NE	NW	11	09N	56E	0	IRD		2/22/1982	0		NY	ZIMMERMAN, RUBY
173B	45368			2/22/1982	DEN	UG	SW	SW	29	09N	56E	0	IRD		2/22/1982	0		NY	MUNRO, ROSALIND
173B	45369			2/22/1982	DEN	UG	NE	SE	29	09N	56E	0	IRD		2/22/1982	0	AFA	NY	CLINCH, BENNETT J.
173B	45370			2/22/1982	DEN	UG	NE	NE	29	09N	56E	0	IRD		2/22/1982	0	AFA	NY	SILVA, PAUL
173B	45371			2/22/1982	DEN	UG	NE	SE	20	09N	56E	0	IRD		2/22/1982	0	AFA	NY	RANDALL, ED
173B	45372			2/22/1982	DEN	UG	NE	SE	23	09N	56E	0	IRD		2/22/1982	0	AFA	NY	OTIS, ROBERT M.
173B	45373			2/22/1982	DEN	UG	NE	SE	26	09N	56E	0	IRD		2/22/1982	0	AFA	NY	PROCTOR, ROBERT
173B	45450			3/15/1982	CAN	UG	NW	NE	3	11N	56E	0	IRR		3/15/1982	0	AFA	NY	WENTZ, JOANNA MAY
173B	45947			7/19/1982	DEN	UG	NE	NE	4	09N	56E	0	IRD		7/19/1982	0	AFA	NY	OTIS, ROBERT G.
173B	45948			7/19/1982	DEN	UG	SE	NE	22	09N	56E	0	IRD		7/19/1982	0	AFA	NY	OTIS, TERRY
173B	45949			7/19/1982	DEN	UG	SE	SW	23	09N	56E	0	IRD		7/19/1982	0	AFA	NY	OTIS, TIM E.
173B	45950			7/19/1982	DEN	UG	NE	NW	4	09N	56E	0	IRD		7/19/1982	0	AFS	NY	OTIS, RUTH EVAN



Basin	App	Change App.	Cert	File Date	Status <sup>1</sup>	Source <sup>2</sup>	POD Qtr	POD Sec	POD Twn	POD Rng	Div Rate (CFS)	Type of Use	Sup	Priority Date	Annual Duty	Units <sup>3</sup>	County	Owner of Record
173B	4677		8232	11/5/1917	CER	STR	NE	NW	3 11N	56E	0.158	IRR						NORMA J. BRADSHAW (40%), KARL TODD BRADSHAW(UNDIV 20%), JODY MAE BRADSHAW(UNDIV 20%), NORMA J. BRADSHAW(UNDIV 20%)
173B	47255			9/19/1983	CAN	UG	E2	26 09N	56E	56E	7.8	IRD		11/5/1917		77 AFA	NY	SILVA, ALICE
173B	47281		12326	9/30/1983	CER	UG	SW	SE	1 06N	54E	0.03	STK		9/19/1983	0		NY	CROSS L. RANCHES, LLC
173B	47282		12327	9/30/1983	CER	UG	NW	SE	14 05N	54E	0.03	STK		9/30/1983	21 728 AFA		NY	CROSS L. RANCHES, LLC
173B	47365			10/28/1983	CAN	UG			20 09N	56E	5.4	IRD		10/28/1983	1280 AFS		NY	LOGAN, ROBERT L.
173B	47374			11/1/1983	CAN	UG			14 09N	56E	0	IRD		11/1/1983	0		NY	KIMBALL, ROBERT L.
173B	47392			11/7/1983	CAN	UG	NE	NW	24 07N	54E	0.009	STK		11/7/1983	2 7927 AFS		NY	RUSSELL, DAN
173B	47393			11/7/1983	CAN	UG	NW	NW	34 09N	55E	0.009	STK		11/7/1983	2 7927 AFS		NY	RUSSELL, DAN
173B	47394			11/7/1983	CAN	UG	SE	NW	14 09N	55E	0.009	STK		11/7/1983	2 7927 AFS		NY	RUSSELL, DAN
173B	47455		1110	12/4/1917	CER	STR	SE	SW	5 05N	57E	0.45	IRR		12/4/1917	135 09 AFA		NY	CROSS L. RANCHES LLC
173B	47622			1/30/1984	DEN	UG	NE	SE	26 05N	54E	5.4	IRD		1/30/1984	1280 AFA		NY	CENTRAL NEVADA WATER COMPANY
173B	47623			1/30/1984	DEN	UG	NE	SE	27 05N	54E	5.4	IRD		1/30/1984	1280 AFA		NY	CENTRAL NEVADA WATER COMPANY
173B	47624			1/30/1984	DEN	UG	SW	NE	34 05N	54E	5.4	IRD		1/30/1984	1280 AFA		NY	CENTRAL NEVADA WATER COMPANY
173B	47625			1/30/1984	DEN	UG	NE	SW	22 05N	54E	5.4	IRD		1/30/1984	1280 AFA		NY	CENTRAL NEVADA WATER COMPANY
173B	47626			1/30/1984	DEN	UG	NE	SW	15 05N	54E	5.4	IRD		1/30/1984	1280 AFA		NY	CENTRAL NEVADA WATER COMPANY
173B	47627			1/30/1984	DEN	UG	NE	SW	10 05N	54E	5.4	IRD		1/30/1984	1280 AFA		NY	CENTRAL NEVADA WATER COMPANY
173B	47628			1/30/1984	DEN	UG	SW	NE	4 04N	54E	5.4	IRD		1/30/1984	1280 AFA		NY	CENTRAL NEVADA WATER COMPANY
173B	47629			1/30/1984	DEN	UG	SW	NE	6 04N	54E	5.4	IRD		1/30/1984	1280 AFA		NY	CENTRAL NEVADA WATER COMPANY
173B	47630			1/30/1984	DEN	UG	NW	SE	7 04N	54E	5.4	IRD		1/30/1984	1280 AFA		NY	CENTRAL NEVADA WATER COMPANY
173B	47631			1/30/1984	DEN	UG	NW	SW	8 04N	54E	5.4	IRD		1/30/1984	1280 AFA		NY	CENTRAL NEVADA WATER COMPANY
173B	47632			1/30/1984	DEN	UG	NW	NE	16 04N	54E	5.4	IRD		1/30/1984	1280 AFA		NY	CENTRAL NEVADA WATER COMPANY
173B	47633			1/30/1984	DEN	UG	NW	NE	15 04N	54E	5.4	IRD		1/30/1984	1280 AFA		NY	CENTRAL NEVADA WATER COMPANY
173B	47666			2/8/1984	CAN	UG	SE	NW	6 05N	55E	5.4	IRD		2/8/1984	1280 AFA		NY	CENTRAL NEVADA WATER COMPANY
173B	47667			2/8/1984	CAN	UG	SE	NW	15 05N	55E	5.4	IRD		2/8/1984	1280 AFA		NY	CENTRAL NEVADA WATER COMPANY
173B	47668			2/8/1984	CAN	UG	NW	SE	16 05N	55E	5.4	IRD		2/8/1984	1280 AFA		NY	CENTRAL NEVADA WATER COMPANY
173B	47669			2/8/1984	CAN	UG	SE	NW	9 05N	55E	5.4	IRD		2/8/1984	1280 AFA		NY	CENTRAL NEVADA WATER COMPANY
173B	47670			2/8/1984	CAN	UG	NE	SW	8 05N	55E	5.4	IRD		2/8/1984	1280 AFA		NY	CENTRAL NEVADA WATER COMPANY
173B	47671			2/8/1984	CAN	UG	NE	NW	8 05N	55E	5.4	IRD		2/8/1984	1280 AFA		NY	CENTRAL NEVADA WATER COMPANY
173B	47733			2/27/1984	CAN	UG	NW	NE	33 10N	56E	0	IRD		2/27/1984	0		NY	ANDERSON, AUDRIA LORRAINE
173B	47734			3/26/1984	CAN	UG	NE	NW	31 15N	57E	5.4	IRD		3/26/1984	1280 AFA		WP	WARD, G. KAREN
173B	47935			3/26/1984	CAN	UG	NE	NE	31 15N	57E	5.4	IRD		3/26/1984	1280 AFA		WP	WARD, GENE R.
173B	48046	31444		5/21/1984	CAN	UG	SW	SE	11 05N	54E	2.12	IRR		5/3/1977	502 64 AFA		NY	SILVER SPIKE EXPLORATION CO. INC.
173B	48047	31444		5/21/1984	CAN	UG	SW	SW	12 05N	54E	2.12	IRR		5/3/1977	502 64 AFA		NY	SILVER SPIKE EXPLORATION CO. INC.
173B	48048	31444		5/21/1984	CAN	UG	SW	NE	14 05N	54E	2.12	IRR		5/3/1977	502 64 AFA		NY	SILVER SPIKE EXPLORATION CO. INC.
173B	48049	31444		5/21/1984	CAN	UG	SW	NW	13 05N	54E	2.12	IRR		5/3/1977	502 64 AFA		NY	SILVER SPIKE EXPLORATION CO. INC.
173B	4817			1/4/1918	CAN	STR	NW	NW	24 06N	57E	0	IRR		1/4/1918	0		NY	EVANS, JOHN W.
173B	48346	31424		9/6/1984	DEN	UG	NE	SE	36 05N	54E	5.4	IRD		5/3/1977	1280 AFA		NY	CONNEALY, ROBERT E.
173B	48347	31424		9/6/1984	CAN	UG	NE	SE	3 04N	54E	5.4	IRD		5/3/1977	1280 AFA		NY	CONNEALY, MARY ANN
173B	48348	31425		9/6/1984	CAN	UG	NE	NW	7 04N	55E	5.4	IRD		5/3/1977	1280 AFA		NY	PEDDICORD, THOMAS E.
173B	48349	31425		9/6/1984	CAN	UG	NE	SW	7 04N	55E	5.4	IRD		5/3/1977	1280 AFA		NY	PEDDICORD, JUDITH A.
173B	48350	31426		9/6/1984	CAN	UG	NE	NW	14 04N	54E	5.4	IRD		5/3/1977	1280 AFA		NY	PEDDICORD, THOMAS L.
173B	48351	31426		9/6/1984	CAN	UG	NE	SW	14 04N	54E	5.4	IRD		5/3/1977	1280 AFA		NY	PEDDICORD, T. JEAN
173B	48352	31427		9/6/1984	CAN	UG	NE	NW	16 04N	54E	5.4	IRD		5/3/1977	1280 AFA		NY	DIERCKS, ROGER F.
173B	48353	31427		9/6/1984	CAN	UG	NE	SW	16 04N	54E	5.4	IRD		5/3/1977	1280 AFA		NY	DIERCKS, REBECCA
173B	48354	31429		9/6/1984	DEN	UG	SE	NW	7 04N	54E	5.4	IRD		5/3/1977	1280 AFA		NY	PEDDICORD, STEVEN L.
173B	48355	31429		9/6/1984	CAN	UG	SE	SW	7 04N	54E	5.4	IRD		5/3/1977	1280 AFA		NY	TOM, CHRISTINE
173B	48356	31430		9/6/1984	DEN	UG	SW	NE	27 05N	54E	5.4	IRD		5/3/1977	1280 AFA		NY	LISSOLO, STEPHANA J.
173B	48357	31430		9/6/1984	DEN	UG	NW	NW	26 05N	54E	5.4	IRD		5/3/1977	1280 AFA		NY	BRADSHAW, WARREN
173B	48358	31431		9/6/1984	DEN	UG	SE	NW	26 04N	53E	5.4	IRD		5/3/1977	1280 AFA		NY	KOEHLER, RUSSELL C.
173B	48359	31431		9/6/1984	DEN	UG	SE	SW	26 04N	53E	5.4	IRD		5/3/1977	1280 AFA		NY	KOEHLER, JEAN ANN
173B	48360	31433		9/6/1984	WDR	UG	NE	SW	3 03N	53E	5.4	IRD		5/3/1977	1280 AFA		NY	LISSOLO, LELAND
173B	48361	31433		9/6/1984	WDR	UG	NE	NW	10 03N	53E	5.4	IRD		5/3/1977	1280 AFA		NY	LISSOLO, JANET
173B	48362	31434		9/6/1984	CAN	UG	NE	NW	7 03N	53E	5.4	IRD		5/3/1977	1271.1 AFA		NY	BOYER, MARY A.
173B	48363	31434		9/6/1984	CAN	UG	NE	NW	8 03N	53E	5.4	IRD		5/3/1977	1280 AFA		NY	BOYER, GARY D.



## Nevada Division of Water Rights Database, Hydrographic Abstract Advanced Search, Basin 173B Railroad Valley/Northern Part

Basin	App	Change App.	Cert	File Date	Status <sup>1</sup>	Source <sup>2</sup>	POD Qtr	POD Sec	POD Twn	POD Rng	Div Rate (CFS)	Type of Use	Sup	Priority Date	Annual Duty	Units <sup>3</sup>	County	Owner of Record
173B	48364	31435		9/6/1984	DEN	UG	NE SE	31 04N	53E	54E	5.4 IRR			5/3/1977	1280	AFA	NY	WILES, TERRIE L.
173B	48365	31435		9/6/1984	DEN	UG	NE SW	13 05N	54E	54E	5.4 IRR			5/3/1977	1280	AFA	NY	LISSOLO, LEONARD F.
173B	48366	31436		9/6/1984	CAN	UG	NE NW	14 04N	53E	53E	5.4 IRR			5/3/1977	1280	AFA	NY	DIERCKS, FRANK D.
173B	48367	31436		9/6/1984	CAN	UG	NE SW	14 04N	53E	53E	5.4 IRR			5/3/1977	1280	AFA	NY	DIERCKS, IRENE
173B	48368	31437		9/6/1984	WDR	UG	NW SW	1 03N	53E	53E	5.4 IRR			5/3/1977	1280	AFA	NY	CRANSTON, GARY
173B	48369	31437		9/6/1984	WDR	UG	NE NW	12 03N	53E	54E	5.4 IRR			5/3/1977	1280	AFA	NY	CRANSTON, COLLETTIE E.
173B	48445	44758	12223	9/28/1984	CER	UG	SE SE	35 09N	56E	56E	0.07 REC			10/29/1981	50 668	AFA	NY	BLM
173B	48502	31438		10/19/1984	DEN	UG	NE NE	31 04N	53E	54E	5.4 IRR			5/3/1977	1280	AFA	NY	LARSON, ILA A.
173B	4867			1/25/1918	CAN	STR	NE SW	31 10N	57E	57E	0 IRR			1/25/1918	0		NY	MUNSON, C.S.
173B	4874			1/30/1918	WDR	SPR	SE SE	14 14N	56E	56E	1.6 IRR			1/30/1918	640	AFS	WP	EUREKA LAND AND STOCK CO.
173B	4878			1/30/1918	CAN	STR	SE SE	14 14N	56E	56E	1.6 IRR			1/30/1918	640	AFS	WP	EUREKA LAND AND STOCK CO.
173B	4879			1/30/1918	CAN	STR	SW NW	25 14N	56E	56E	0 IRR			1/30/1918	0	AFS	WP	EUREKA LAND AND STOCK CL.
173B	48877			2/25/1985	WDR	UG	SE NW	24 09N	56E	56E	0.25 IND			2/25/1985	35 354	AFA	NY	WESTERN AVENUE PROPERTIES
173B	49051			5/16/1985	ABR	UG	NE SE	24 09N	56E	56E	0 IND			5/16/1985	0	AFA	NY	PETRO SOURCE CORP.
173B	49051	CHANGED BY:	55152		PER	UG												
173B	49092			5/30/1985	CAN	UG	NE NW	33 10N	57E	57E	0.2 STK			5/30/1985			NY	BLM
173B	49649		13415	1/23/1986	CER	UG	NE NW	33 10N	57E	57E	0.034 STK			1/23/1986	23 876	AFA	NY	BLM
173B	49747			3/10/1986	CAN	UG	NE NW	10 03N	53E	53E	5.4 IRR			3/10/1986	1280	AFA	NY	LISSOLO, JANET
173B	49748			3/10/1986	CAN	UG	NW SW	1 03N	53E	53E	5.4 IRR			3/10/1986	1280	AFA	NY	CRANSTON, GARY
173B	49749			3/10/1986	CAN	UG	NE NW	12 03N	53E	53E	5.4 IRR			3/10/1986	1280	AFA	NY	CRANSTON, COLLETTIE E.
173B	49750			3/10/1986	CAN	UG	NE SW	3 03N	53E	53E	5.4 IRR			3/10/1986	1280	AFA	NY	LISSOLO, LELAND
173B	50245			10/2/1986	CAN	UG	NW NW	28 15N	57E	57E	1 MM			10/2/1986	723 95	AFA	WP	MX
173B	50246			10/2/1986	CAN	UG	NE NW	28 15N	57E	57E	1 MM			10/2/1986	723 95	AFA	WP	MX
173B	51114			7/15/1987	WDR	UG	NW NW	27 15N	57E	57E	1 MM			7/15/1987	723 95	AFA	WP	MX
173B	51115			7/15/1987	WDR	UG	SW SE	28 15N	57E	57E	1 MM			7/15/1987	723 95	AFA	WP	MX
173B	51116			7/15/1987	WDR	UG	SE NE	28 15N	57E	57E	1 MM			7/15/1987	723 95	AFA	WP	MX
173B	51129		14757	7/20/1987	CER	UG	NE SW	23 06N	56E	56E	0.3 IRR			7/20/1987	175 2	AFA	NY	CROSS L. RANCHES LLC
173B	51262			9/2/1987	CAN	SPR	SE SE	33 15N	57E	57E	1 MM			9/2/1987	723 95	AFA	WP	U.S.M.X. OF NEVADA, INC.
173B	51423			10/8/1987	WDR	UG	NW SW	33 15N	57E	57E	0.5 QM			10/8/1987	22 403	AFA	WP	MX
173B	5156			7/17/1918	CAN	SPR		06N	54E	54E	0 UKN			7/17/1918	0		NY	SHARP, H.L.
173B	51777			1/20/1988	PER	SPR	SE SW	33 15N	57E	57E	4 IRR			1/20/1988	1280	AFA	WP	HALSTEAD-FORSGREEN RANCHES, INC.
173B	51778		13698	1/20/1988	CER	SPR	SE SW	33 15N	57E	57E	0.031 STK			1/20/1988	22 741	AFA	WP	HALSTEAD-FORSGREEN RANCHES, INC.
173B	52143		15255	5/27/1988	CER	SPR	NW NW	21 04N	52E	52E	0.008 STK			5/27/1988	5 6468	AFA	NY	HELEN FALLINI LIVING TRUST & FALLINI 1983
173B	52144		15256	5/27/1988	CER	SPR	NW SE	20 04N	52E	52E	0.002 STK			5/27/1988	1 5958	AFA	NY	HELEN FALLINI LIVING TRUST & FALLINI 1983
173B	52146		15222	5/27/1988	CER	SPR	NW SW	6 04N	53E	53E	0.003 STK			5/27/1988	2 3937	AFA	NY	HELEN FALLINI LIVING TRUST & FALLINI 1983
173B	52147		15223	5/27/1988	CER	SPR	NE SW	12 04N	52E	52E	0.003 STK			5/27/1988	2 3937	AFA	NY	HELEN FALLINI LIVING TRUST & FALLINI 1983
173B	52169	32319		5/27/1988	CAN	UG	NE NE	30 11N	58E	58E	2.7 IRR			6/27/1977	640	AFA	NY	LANI, DONALD
173B	52170			5/27/1988	DEN	SPR	NW NE	15 11N	58E	58E	3 IRR			5/27/1988	2240	AFA	NY	LANI, DONALD
173B	5291			10/17/1918	DEN	SPR		LT10	13 42N	55E	0.1 IRR			10/17/1918	0		NY	GOICOECHEA, JULIANA
173B	5292			10/17/1918	DEN	SPR		LT04	13 42N	55E	0.4 IRR			10/17/1918	0	AFA	NY	GOICOECHEA, JULIANA
173B	53159		14811	4/21/1989	CER	STR	SE SE	14 14N	56E	56E	0.031 STK			4/21/1989	22 403	AFA	WP	HALSTEAD-FORSGREEN RANCHES, INC.
173B	53160			4/21/1989	PER	SPR	SE SE	14 14N	56E	56E	4 IRR			4/21/1989	2895 9	AFA	WP	HALSTEAD-FORSGREEN RANCHES, INC.
173B	53161			4/21/1989	PER	SPR	SE NW	25 14N	56E	56E	2 IRR			4/21/1989	1448	AFA	WP	HALSTEAD-FORSGREEN RANCHES, INC.
173B	53162			4/21/1989	PER	SPR	NW SW	25 14N	56E	56E	1 IRR			4/21/1989	724	AFA	WP	HALSTEAD-FORSGREEN RANCHES, INC.
173B	53163			4/21/1989	PER	SPR	SE NW	36 14N	56E	56E	0.5 IRR			4/21/1989	362	AFA	WP	HALSTEAD-FORSGREEN RANCHES, INC.
173B	53171	32997		4/24/1989	CAN	UG		LT05	19 10N	57E	5 IRR			10/22/1993	1163	AFA	NY	NEVADA SETTLERS ASSN.
173B	53172	32992		4/24/1989	CAN	UG	NE NW	8 10N	57E	57E	5.4 IRR			11/14/1991	1280	AFA	NY	NEVADA SETTLERS ASSN.
173B	53389		14470	6/16/1989	FOR	UG	SW NE	35 15N	56E	56E	0 MM			9/13/1993	0	AFA	WP	LEMICH, MIKE
173B	53390			6/16/1989	WDR	UG	NW SW	10 15N	56E	56E	0 MM			6/16/1989			WP	ALTA GOLD COMPANY
173B	53516			6/29/1989	DEN	SPR	NW NW	21 04N	52E	52E	0.1 REC			6/29/1989	0		NY	FALLINI, JOE B. JR.
173B	53517			6/29/1989	DEN	SPR	NW SE	20 04N	52E	52E	0.1 REC			6/29/1989	0		NY	FALLINI, JOE B. JR.
173B	53524			6/29/1989	DEN	SPR	NE SW	12 04N	52E	52E	0.1 REC			6/29/1989	0		NY	FALLINI, JOE B. JR.
173B	53526			6/29/1989	DEN	SPR	NW SW	6 04N	53E	53E	0.1 REC			6/29/1989	0		NY	FALLINI, JOE B. JR.
173B	53541			6/29/1989	DEN	UG	SW NE	2 03N	52E	52E	0.1 REC			6/29/1989	72 39	AFA	NY	FALLINI, JOE B. JR.
173B	53543			6/29/1989	DEN	UG	SW NW	19 04N	52E	52E	0.1 REC			6/29/1989	72 39	AFA	NY	FALLINI, JOE B. JR.
173B	53555			6/29/1989	CAN	STR	NE SW	3 03N	52E	52E	0.1 REC			6/29/1989	0		NY	FALLINI, JOE B. JR.
173B	53557			6/29/1989	DEN	STR	SE NW	3 03N	52E	52E	0.1 REC			6/29/1989	0		NY	FALLINI, JOE B. JR.



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Basin	App	Change App.	Cert	File Date	Status <sup>1</sup>	Source <sup>2</sup>	POD QQ	POD Qtr	POD Sec	POD Twn	POD Rng	Div Rate (CFS)	Type of Use	Sup	Priority Date	Annual Duty	Units <sup>3</sup>	County	Owner of Record
173B	53558			6/29/1989	CAN	STR	NE	SW	3 03N	52E	53E	0.1 REC	0.1 REC		6/29/1989	0		NY	FALLINI, JOE B. JR.
173B	53585			6/29/1989	DEN	UG	SW	SE	29 04N	53E	53E	0.1 REC	0.1 REC		6/29/1989	72.39 AFA	NY	NY	FALLINI, JOE B. JR.
173B	53965			10/17/1989	RFP	UG	NE	SW	4 06N	57E	57E	6 MUN	6 MUN		10/17/1989	4344 AFA	NY	NY	SOUTHERN NEVADA WATER AUTHORITY
173B	53966			10/17/1989	RFP	UG	SE	NE	13 06N	56E	56E	6 MUN	6 MUN		10/17/1989	4344 AFA	NY	NY	SOUTHERN NEVADA WATER AUTHORITY
173B	53967			10/17/1989	RFP	UG	SE	SW	26 06N	56E	56E	6 MUN	6 MUN		10/17/1989	4344 AFA	NY	NY	SOUTHERN NEVADA WATER AUTHORITY
173B	53968			10/17/1989	RFP	UG	NE	SW	3 05N	56E	56E	6 MUN	6 MUN		10/17/1989	4344 AFA	NY	NY	SOUTHERN NEVADA WATER AUTHORITY
173B	53969			10/17/1989	RFP	UG	NE	SW	20 05N	56E	56E	6 MUN	6 MUN		10/17/1989	4344 AFA	NY	NY	SOUTHERN NEVADA WATER AUTHORITY
173B	53970			10/17/1989	RFP	UG	NE	SW	13 04N	54E	54E	6 MUN	6 MUN		10/17/1989	4344 AFA	NY	NY	SOUTHERN NEVADA WATER AUTHORITY
173B	53971			10/17/1989	RFP	UG	SE	SW	35 04N	53E	53E	6 MUN	6 MUN		10/17/1989	4344 AFA	NY	NY	SOUTHERN NEVADA WATER AUTHORITY
173B	53972			10/17/1989	RFP	UG	SE	SW	30 07N	55E	55E	6 MUN	6 MUN		10/17/1989	4344 AFA	NY	NY	SOUTHERN NEVADA WATER AUTHORITY
173B	53973			10/17/1989	RFP	UG	SW	SW	27 06N	54E	54E	6 MUN	6 MUN		10/17/1989	4344 AFA	NY	NY	SOUTHERN NEVADA WATER AUTHORITY
173B	53974			10/17/1989	RFP	UG	SE	NW	8 04N	54E	54E	6 MUN	6 MUN		10/17/1989	4344 AFA	NY	NY	SOUTHERN NEVADA WATER AUTHORITY
173B	53975			10/17/1989	RFP	UG	SE	NW	24 07N	57E	57E	10 MUN	10 MUN		10/17/1989	7240 AFA	NY	NY	SOUTHERN NEVADA WATER AUTHORITY
173B	53976			10/17/1989	RFP	UG	SE	SW	19 06N	57E	57E	10 MUN	10 MUN		10/17/1989	7240 AFA	NY	NY	SOUTHERN NEVADA WATER AUTHORITY
173B	53977			10/17/1989	RFP	UG	NW	NE	19 05N	57E	57E	10 MUN	10 MUN		10/17/1989	7240 AFA	NY	NY	SOUTHERN NEVADA WATER AUTHORITY
173B	53978			10/17/1989	RFP	UG	NE	SW	6 04N	56E	56E	10 MUN	10 MUN		10/17/1989	7240 AFA	NY	NY	SOUTHERN NEVADA WATER AUTHORITY
173B	53979			10/17/1989	RFP	UG	NE	SE	3 04N	55E	55E	10 MUN	10 MUN		10/17/1989	7240 AFA	NY	NY	SOUTHERN NEVADA WATER AUTHORITY
173B	53980			10/17/1989	RFP	UG	SE	SE	13 03N	57E	57E	10 MUN	10 MUN		10/17/1989	7240 AFA	NY	NY	SOUTHERN NEVADA WATER AUTHORITY
173B	53985			10/17/1989	RFP	UG	SE	NE	3 07N	54E	54E	6 MUN	6 MUN		10/17/1989	4344 AFA	NY	NY	SOUTHERN NEVADA WATER AUTHORITY
173B	53986			10/17/1989	RFP	UG	SE	NW	15 07N	57E	57E	6 MUN	6 MUN		10/17/1989	4344 AFA	NY	NY	SOUTHERN NEVADA WATER AUTHORITY
173B	54067			10/17/1989	WDR	UG	SE	SW	6 15N	57E	57E	10 MUN	10 MUN		10/17/1989	0 AFA	WP	WP	LAS VEGAS VALLEY WATER DISTRICT
173B	54132			11/1/1989	EXP	UG	NE	NW	35 09N	57E	57E	0.5 IND	0.5 IND		11/1/1989	80.651 AFA	NY	NY	HANKS, CARL J.
173B	55152	49051		8/3/1990	PER	UG	SE	SE	24 09N	56E	56E	0.5 IND	0.5 IND		10/19/1999	32.254 AFA	NY	NY	PETRO SOURCE CORP.
173B	55153			8/3/1990	DEN	UG	SE	SE	24 09N	56E	56E	0.05 IND	0.05 IND		8/3/1990	24.183 AFA	NY	NY	PETRO SOURCE CORP.
173B	55154			8/3/1990	DEN	UG	NE	SE	24 09N	56E	56E	0.112 IND	0.112 IND		8/3/1990	48.397 AFA	NY	NY	PETRO SOURCE CORP.
173B	55155			8/3/1990	DEN	UG	SE	SE	24 09N	56E	56E	0.112 IND	0.112 IND		8/3/1990	48.397 AFA	NY	NY	PETRO SOURCE CORP.
173B	5520			5/31/1919	CAN	SPR	NW	SE	34 16N	57E	57E	0 IMM	0 IMM		5/31/1919	0 AFA	WP	WP	HARWOOD, W.M.
173B	5661		948	8/9/1919	CER	SPR	NE	SW	24 06N	54E	54E	0.02 STK	0.02 STK		8/9/1919	14.424 AFA	NY	NY	GRUBE, B.H.
173B	5663		950	8/9/1919	CER	SPR	NW	NE	12 06N	54E	54E	0.02 STK	0.02 STK		8/9/1919	14.424 AFA	NY	NY	GRUBE, B.H.
173B	5669			8/14/1919	CAN	SPR	NE	NE	35 16N	57E	57E	0 IMM	0 IMM		8/14/1919	0 AFA	WP	WP	KELLER, KENT E.
173B	569			7/15/1907	CAN	STR	SE	SE	28 04N	55E	55E	0 PWR	0 PWR		7/15/1907	0	NY	NY	BUSH, BURT
173B	57465	26433		4/21/1992	PER	UG	SE	SE	33 05N	55E	55E	2.4 IRR	2.4 IRR	Y	7/20/2012	1280 AFA	NY	NY	GIBSON, GEORGIA LEE
173B	57465	CHANGED BY:	75132		WDR	UG								Y					
173B	57465	CHANGED BY:	75259		WDR	UG								Y					
173B	57465	CHANGED BY:	69904		ABR	UG								Y					
173B	57466	26435		4/21/1992	PER	UG	NW	NW	33 05N	55E	55E	5.23 IRR	5.23 IRR	Y	7/20/2012	1240 AFA	NY	NY	GIBSON, GEORGIA LEE
173B	5831			11/1/1919	DEN	SPR	NW	SW	5 12N	56E	56E	0 IRR	0 IRR		11/1/1919	0	NY	NY	TOGNONI, J.R.
173B	58492			1/21/1993	PER	SPR	SW	NE	30 11N	58E	58E	0.05 IRR	0.05 IRR		1/21/1993	36.2 AFA	NY	NY	DAVID WEAVER
173B	58492	CHANGED BY:	82040		RFA	SPR													
173B	58805	36025		5/4/1993	CER	UG	SE	SE	15 10N	57E	57E	2.79 IRR	2.79 IRR	Y	10/12/1978	610.88 AFA	NY	NY	GROVER, JUDITH ELLEN AND DANA B
173B	6062		625	4/22/1920	CER	SPR	SW	NW	23 15N	57E	57E	0.001 STK	0.001 STK		4/22/1920	0.5524 AFA	WP	WP	ROSEVEAR, JOSEPH
173B	61221			5/10/1995	PER	UG	NE	NE	27 10N	57E	57E	5.4 IRR	5.4 IRR		1/10/2010	1280 AFA	NY	NY	JACQUELYN S. REYNOLDS
173B	6165		1206	6/10/1920	CER	UG	NW	NW	32 10N	57E	57E	0.3687 IRR	0.3687 IRR		6/10/1920	176.98 AFA	NY	NY	RWD CURRANT CREEK, LLC & DIELEMAN, RICHARD W.
173B	6165	CHANGED BY:	76986T		WDR	UG													
173B	6165	CHANGED BY:	81693		RFA	UG													
173B	6165	CHANGED BY:	77160T		EXP	UG													
173B	6193			6/19/1920	DEN	SPR	SW	NE	5 12N	56E	56E	0 IRR	0 IRR		6/19/1920	0	NY	NY	TOGNONI, J.C.
173B	6266			9/10/1920	CAN	SPR	NE	NW	16 04N	56E	56E	0.1 IMM	0.1 IMM		9/10/1920	0	NY	NY	MORSE, FRED O.
173B	6294			10/5/1920	CAN	SPR	NE	NE	35 16N	57E	57E	2 IMM	2 IMM		10/5/1920		WP	WP	ARGYLE MINING CO.
173B	6331			11/22/1920	DEN	SPR	NE	NE	35 16N	57E	57E	0 IMM	0 IMM		11/22/1920	0	WP	WP	KELLER, KENT E.
173B	63707		16144	1/2/1998	CER	UG	NW	SE	8 10N	58E	58E	0.0624 QM	0.0624 QM		1/2/1998	0.2427 AFA	NY	NY	NYE COUNTY COMMISSIONERS
173B	6372			1/10/1921	CAN	STR	NE	SE	19 05N	56E	56E	0 IRR	0 IRR		1/10/1921	0	NY	NY	TIDBALL, GUY
173B	6392			1/31/1921	CAN	STR	NW	SW	7 04N	55E	55E	0 IRR	0 IRR		1/31/1921	0	NY	NY	GARRETT, EMERY E.
173B	64062	33061		4/24/1998	ABR	UG	SE	SE	34 06N	56E	56E	0 IRR	0 IRR		8/8/1977	0 AFA	NY	NY	SHARP, GERALD HOWARD
173B	64126	CHANGED BY:	76988		PER	UG	NE	NW	35 09N	57E	57E	0.006 STK	0.006 STK		5/18/1998	4.4806 AFA	NY	NY	DECATUR 215, LLC



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173B	64127			5/18/1998	PER	STR	SE	NW	8 10N	58E	58E	3.9 IRR			5/18/1998	1248 AFA	0 AFA	NY	MANZONIE, JOHN DENNIS
173B	65509			9/22/1999	DEN	UG	NW	NE	10 04N	53E	53E	5.4 IRD			9/22/1999	1280 AFA	0 AFA	NY	CSS COMPANY
173B	65510			9/22/1999	DEN	UG	NW	SE	10 04N	53E	53E	5.4 IRD			9/22/1999	1280 AFA	1280 AFA	NY	CSS COMPANY
173B	65511			9/22/1999	DEN	UG	NW	NE	11 04N	53E	53E	5.4 IRD			9/22/1999	1280 AFA	1280 AFA	NY	CSS COMPANY
173B	65512			9/22/1999	DEN	UG	NW	SE	11 04N	53E	53E	5.4 IRD			9/22/1999	1280 AFA	1280 AFA	NY	CSS COMPANY
173B	65513			9/22/1999	DEN	UG	NW	NE	12 04N	53E	53E	5.4 IRD			9/22/1999	1280 AFA	1280 AFA	NY	CSS COMPANY
173B	65514			9/22/1999	DEN	UG	NW	SE	12 04N	53E	53E	5.4 IRD			9/22/1999	1280 AFA	1280 AFA	NY	CSS COMPANY
173B	65515			9/22/1999	DEN	UG	NW	NE	13 04N	53E	53E	5.4 IRD			9/22/1999	1280 AFA	1280 AFA	NY	CSS COMPANY
173B	65516			9/22/1999	DEN	UG	NW	SE	13 04N	53E	53E	5.4 IRD			9/22/1999	1280 AFA	1280 AFA	NY	CSS COMPANY
173B	65517			9/22/1999	DEN	UG	NW	NE	14 04N	53E	53E	5.4 IRD			9/22/1999	1280 AFA	1280 AFA	NY	CSS COMPANY
173B	65518			9/22/1999	DEN	UG	NW	SE	14 04N	53E	53E	5.4 IRD			9/22/1999	1280 AFA	1280 AFA	NY	CSS COMPANY
173B	65519			9/22/1999	DEN	UG	NW	NE	15 04N	53E	53E	5.4 IRD			9/22/1999	1280 AFA	1280 AFA	NY	CSS COMPANY
173B	65520			9/22/1999	DEN	UG	NW	SE	15 04N	53E	53E	5.4 IRD			9/22/1999	1280 AFA	1280 AFA	NY	CSS COMPANY
173B	65521			9/22/1999	DEN	UG	NW	NE	7 04N	54E	54E	5.4 IRD			9/22/1999	0 AFA	0 AFA	NY	CSS COMPANY
173B	65522			9/22/1999	DEN	UG	NW	SE	7 04N	54E	54E	5.4 IRD			9/22/1999	0 AFA	0 AFA	NY	CSS COMPANY
173B	65523			9/22/1999	DEN	UG	NW	NE	9 05N	54E	54E	5.4 IRD			9/22/1999	0 AFA	0 AFA	NY	CSS COMPANY
173B	65524			9/22/1999	DEN	UG	NW	SE	9 05N	54E	54E	5.4 IRD			9/22/1999	0 AFA	0 AFA	NY	CSS COMPANY
173B	65525			9/22/1999	DEN	UG	NW	NE	10 05N	54E	54E	5.4 IRD			9/22/1999	0 AFA	0 AFA	NY	CSS COMPANY
173B	65526			9/22/1999	DEN	UG	NW	SE	10 05N	54E	54E	5.4 IRD			9/22/1999	0 AFA	0 AFA	NY	CSS COMPANY
173B	65527			9/22/1999	DEN	UG	NW	NE	15 05N	54E	54E	5.4 IRD			9/22/1999	0 AFA	0 AFA	NY	CSS COMPANY
173B	65528			9/22/1999	DEN	UG	NW	SE	15 05N	54E	54E	5.4 IRD			9/22/1999	0 AFA	0 AFA	NY	CSS COMPANY
173B	65529			9/22/1999	DEN	UG	NW	NE	22 05N	54E	54E	5.4 IRD			9/22/1999	0 AFA	0 AFA	NY	CSS COMPANY
173B	65530			9/22/1999	DEN	UG	NW	SE	22 05N	54E	54E	5.4 IRD			9/22/1999	0 AFA	0 AFA	NY	CSS COMPANY
173B	65531			9/22/1999	DEN	UG	NW	NE	23 05N	54E	54E	5.4 IRD			9/22/1999	0 AFA	0 AFA	NY	CSS COMPANY
173B	65532			9/22/1999	DEN	UG	NW	SE	23 05N	54E	54E	5.4 IRD			9/22/1999	0 AFA	0 AFA	NY	CSS COMPANY
173B	65533			9/22/1999	DEN	UG	NW	NE	20 06N	54E	54E	5.4 IRD			9/22/1999	0	0	NY	CSS COMPANY
173B	6554	CHANGED BY:	1098	8/25/1921	ABR	SPR	SE	NE	24 08N	54E	54E	0 STK			8/25/1921	0 AFA	0 AFA	NY	THE LITTLE PARIS SHEEP COMPANY
173B	65549			9/22/1999	DEN	UG	NW	SE	33 06N	54E	54E	5.4 IRD			9/22/1999	0 AFA	0 AFA	NY	CSS COMPANY
173B	65550			9/22/1999	DEN	UG	NW	NE	33 06N	54E	54E	5.4 IRD			9/22/1999	0 AFA	0 AFA	NY	CSS COMPANY
173B	65551			9/22/1999	DEN	UG	NW	SE	28 06N	54E	54E	5.4 IRD			9/22/1999	0 AFA	0 AFA	NY	CSS COMPANY
173B	65552			9/22/1999	DEN	UG	NW	NE	28 06N	54E	54E	5.4 IRD			9/22/1999	0 AFA	0 AFA	NY	CSS COMPANY
173B	65553			9/22/1999	DEN	UG	NW	SE	21 06N	54E	54E	5.4 IRD			9/22/1999	0 AFA	0 AFA	NY	CSS COMPANY
173B	65554			9/22/1999	DEN	UG	NW	NE	21 06N	54E	54E	5.4 IRD			9/22/1999	0 AFA	0 AFA	NY	CSS COMPANY
173B	65555			9/22/1999	DEN	UG	NW	SE	20 06N	54E	54E	5.4 IRD			9/22/1999	0 AFA	0 AFA	NY	CSS COMPANY
173B	65557			9/22/1999	DEN	UG	NW	NE	30 04N	53E	53E	5.4 IRD			9/22/1999	0 AFA	0 AFA	NY	CSS COMPANY
173B	65558			9/22/1999	DEN	UG	NW	SE	3 04N	53E	53E	5.4 IRD			9/22/1999	0 AFA	0 AFA	NY	CSS COMPANY
173B	6669			4/26/1922	CAN	SPR	SW	NE	3 15N	58E	58E	0 IMM			4/26/1922	0	0	WP	READ, WM.M.
173B	66797		17875	8/30/2000	CER	UG	SE	SW	15 15N	58E	58E	0.011 STK			6/11/2009	7 964 AFA	7 964 AFA	WP	DUCK WATER CATTLE CO.
173B	668			9/9/1907	CAN	STR	SE	SW	04N	55E	55E	0 IMM			9/9/1907	0 AFA	0 AFA	NY	AQUILAR, CARLOS
173B	6759		2207	9/8/1922	CER	STR	SE	SE	18 04N	56E	56E	0.853 IRR			9/8/1922	362 AFA	362 AFA	NY	CROSS L. RANCHES LLC
173B	6769		1220	9/22/1922	CER	SPR	NW	SE	29 13N	55E	55E	0.025 STK			9/22/1922	18 1 AFA	18 1 AFA	NY	U.S.-BUREAU OF INDIAN AFFAIRS
173B	6770		1221	9/22/1922	CER	SPR	NE	NE	31 11N	56E	56E	0.025 STK			9/22/1922	18.107 AFA	18.107 AFA	NY	FLORIO, A.C.
173B	6779		1911	10/6/1922	CER	SPR	SE	SW	34 16N	57E	57E	0.001 STK			10/6/1922	1 1048 AFA	1 1048 AFA	WP	ROSEVEAR, BESSIE
173B	6799			10/18/1922	WDR	SPR	NE	SW	23 11N	55E	55E	0 STK			10/18/1922	0 AFA	0 AFA	NY	FLORIO, ANGELO C.
173B	68239			11/28/2001	PER	UG	SE	NE	16 12N	56E	56E	0 08 COM			11/28/2001	2 AFA	2 AFA	NY	NYE COUNTY SCHOOL DISTRICT
173B	695			9/23/1907	CAN	STR	SW	NE	04N	55E	55E	0 IRR			9/23/1907	0	0	NY	WIDEKIND, JOHN H.
173B	69569			2/17/2003	DEN	UG	SW	NE	35 15N	56E	56E	0.38 MM			2/17/2003	0 AFA	0 AFA	WP	MOYLE, LANE
173B	69904	57465		4/22/2003	ABR	UG	NE	NE	33 05N	55E	55E	0 IRR			12/13/1971	0 AFA	0 AFA	NY	GIBSON, R. THOMAS
173B	69904	CHANGED BY:	75661		PER	UG													
173B	701		324	10/3/1907	CER	STR		SE	23 04N	55E	55E	0.48 IRR			10/3/1907	173 23 AFA	173 23 AFA	NY	CROSS L. RANCHES LLC
173B	70270			7/28/2003	RFA	STR	NW	NE	25 11N	58E	58E				7/28/2003		0 AFA	NY	RWD CURRANT CREEK, LLC UNDIV 72% AND
173B	70593			11/5/2003	PER	UG	SW	SE	31 11N	58E	58E	0.5 IRR			11/5/2003	140 AFA	140 AFA	NY	RICHARD W. DIELMAN 28% DRAYTON, STACY AND CAROLYN
173B	70906			3/1/2004	DEN	SPR	NE	SE	6 11N	58E	58E	0.012 STK			3/1/2004	0 AFA	0 AFA	NY	RWD CURRENT CREEK, LLC
173B	7143		1883	6/25/1924	CER	SPR	SE	SW	33 15N	57E	57E	0.015 STK			6/25/1924	4 4806 AFA	4 4806 AFA	WP	HALSTEAD-FORSGREN RANCHES, INC.
173B	7144		1884	6/25/1924	CER	SPR	SE	SW	33 15N	57E	57E	0.015 STK			6/25/1924	10 864 AFA	10 864 AFA	WP	HALSTEAD-FORSGREN RANCHES, INC.



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Basin	App	Change App.	Cert	File Date	Status <sup>1</sup>	Source <sup>2</sup>	POD QQ	POD Qtr	POD Sec	POD Twn	POD Rng	Div Rate (CFS)	Type of Use	Sup	Priority Date	Annual Duty	Units <sup>3</sup>	County	Owner of Record
173B	725			11/12/1907	CAN	STR	SW	NE	28 12N	04N	55E		0 IRR		11/12/1907	0		NY	WILHELM, GUSTAVE W.
173B	7299			2/6/1925	WDR	STR	SW	NE	28 12N	04N	55E	3.4 IRR			2/6/1925	0		NY	BIRCH, ANNA E.
173B	7303			2/11/1925	CAN	STR	NE	NW	3 11N	56E			0 IRR		2/11/1925	0	0 AFS	NY	AMONETTE BROS.
173B	75132	57465		11/29/2006	WDR	UG	SE	NE	33 05N	55E		2.4 IRR			12/13/1971	0	0 AFA	NY	GIBSON, M. DEAN
173B	75259	57465		1/12/2007	WDR	UG	SE	NE	33 05N	55E		2.4 IRR			12/13/1971	0	0 AFA	NY	GIBSON, R. THOMAS
173B	75505			4/4/2007	RFA	UG	NW	SE	8 10N	58E		10.6 IRR			4/4/2007	4544	0 AFA	NY	RWD CURRANT CREEK, LLC
173B	75661	69904		5/1/2007	PER	UG	SE	NE	33 05N	55E		3 IRR		Y	12/13/1971	0	0 AFA	NY	GIBSON, GEORGIA LEE
173B	7577		1236	11/27/1925	CER	SPR	SW	SW	29 15N	55E		0.02 STK			11/27/1925	14.485	0 AFA	WP	U.S. BUREAU OF INDIAN AFFAIRS
173B	7603		1351	12/14/1925	CER	SPR	SE	NE	16 07N	55E		0.006 STK			12/14/1925	1.8107	0 AFA	NY	MURPHEY, MOBILE GLASS, CANYON CREEK
173B	76231			9/6/2007	CAN	UG	SW	SW	32 06N	56E		0.038 STK			9/6/2007	27.78	0 AFA	NY	NORMAN K. AND SUSAN A. SHARP
173B	76322			9/25/2007	RFA	UG	NE	SE	7 10N	58E		3.5 IRR			9/25/2007	1664	0 AFA	NY	RWD CURRANT CREEK, LLC
173B	76670			1/28/2008	PER	UG	SE	SW	35 05N	55E		2.7 IRR			1/28/2008	640	0 AFA	NY	CROSS L. RANCHES, LLC
173B	76757			2/20/2008	DEN	UG	SW	NE	34 15N	56E		0.38 MM			2/20/2008	64.109	0 AFA	WP	MIKE LEMICH
173B	76825			3/18/2008	PER	UG	NW	NW	27 06N	56E		1.4 IRR			3/18/2008	320	0 AFA	NY	CROSS L. RANCHES, LLC
173B	76986T	6165		4/22/2008	WDR	UG	NE	SE	7 10N	58E		0.3132 IRR			6/10/1920	150.34	0 AFA	NY	RWD CURRANT CREEK, LLC
173B	76987T	22050		4/22/2008	WDR	UG	NE	SE	7 10N	58E		1.75 IRR			6/16/1964	480	0 AFA	NY	RWD CURRANT CREEK, LLC
173B	76988	64062		4/23/2008	PER	UG	SE	SE	34 06N	56E		2.7 IRR			8/8/1977	640	0 AFA	NY	CROSS L RANCHES, LLC
173B	77160T	6165		6/18/2008	EXP	UG	NE	SE	7 10N	58E		0.3687 IRR			6/10/1920	176.98	0 AFA	NY	R.W.D. CURRANT CREEK LLC 72%
173B	77161T	22050		6/18/2008	EXP	UG	NE	SE	7 10N	58E		1.75 IRR			6/16/1964	480	0 AFA	NY	RICHARD W. DIELEMAN C/O DELCO CRANE SERVICES
173B	7787			6/24/1926	ABR	UG	NW	SE	5 06N	56E		0 IRR			6/24/1926	0		NY	BORDOLI, A.F.
173B	7787	CHANGED BY:	8438		CAN	UG													
173B	7807			7/1/1926	WDR	SPR	SW	SE	36 16N	57E		0 MM			7/1/1926	0		WP	SMITH, FRANK T.A.
173B	78269T	23252		4/16/2009	EXP	UG	SW	NW	34 05N	55E		2.7 IRR			1/21/1963	646	0 AFA	NY	JENKINS FARMS
173B	78270	23252		4/16/2009	ABR	UG	SW	NW	34 05N	55E		2.7 IRR		Y	1/21/1963	1280	0 AFA	NY	JENKINS FARMS
173B	78270	CHANGED BY:	81294		PER	UG								Y					
173B	79328			1/28/2010	RFP	UG	NE	SW	4 06N	57E		6 MUN			1/28/2010	0	0 AFA	NY	SOUTHERN NEVADA WATER AUTHORITY
173B	79329			1/28/2010	RFP	UG	SE	NE	13 06N	56E		6 MUN			1/28/2010	0	0 AFA	NY	SOUTHERN NEVADA WATER AUTHORITY
173B	79330			1/28/2010	RFP	UG	SE	SW	26 06N	56E		6 MUN			1/28/2010	0	0 AFA	NY	SOUTHERN NEVADA WATER AUTHORITY
173B	79331			1/28/2010	RFP	UG	NE	SW	3 05N	56E		6 MUN			1/28/2010	0	0 AFA	NY	SOUTHERN NEVADA WATER AUTHORITY
173B	79332			1/28/2010	RFP	UG	NE	SW	20 05N	56E		6 MUN			1/28/2010	0	0 AFA	NY	SOUTHERN NEVADA WATER AUTHORITY
173B	79333			1/28/2010	RFP	UG	NE	SW	13 04N	54E		6 MUN			1/28/2010	0	0 AFA	NY	SOUTHERN NEVADA WATER AUTHORITY
173B	79334			1/28/2010	RFP	UG	SE	SW	35 04N	53E		6 MUN			1/28/2010	0	0 AFA	NY	SOUTHERN NEVADA WATER AUTHORITY
173B	79335			1/28/2010	RFP	UG	SE	SE	30 07N	55E		6 MUN			1/28/2010	0	0 AFA	NY	SOUTHERN NEVADA WATER AUTHORITY
173B	79336			1/28/2010	RFP	UG	SW	SW	27 06N	54E		6 MUN			1/28/2010	0	0 AFA	NY	SOUTHERN NEVADA WATER AUTHORITY
173B	79337			1/28/2010	RFP	UG	SE	NW	8 04N	54E		6 MUN			1/28/2010	0	0 AFA	NY	SOUTHERN NEVADA WATER AUTHORITY
173B	79338			1/28/2010	RFP	UG	SE	NW	24 07N	57E		10 MUN			1/28/2010	0	0 AFA	NY	SOUTHERN NEVADA WATER AUTHORITY
173B	79339			1/28/2010	RFP	UG	SE	SW	19 06N	57E		10 MUN			1/28/2010	0	0 AFA	NY	SOUTHERN NEVADA WATER AUTHORITY
173B	7934		1389	11/19/1926	CER	SPR	SW	NW	11 08N	58E		0.022 STK			11/19/1926	9 2374	0 AFA	NY	GUSTAFSON, DEIL O.
173B	79340			1/28/2010	RFP	UG	NW	NE	19 05N	57E		10 MUN			1/28/2010	0	0 AFA	NY	SOUTHERN NEVADA WATER AUTHORITY
173B	79341			1/28/2010	RFP	UG	NE	SW	6 04N	56E		10 MUN			1/28/2010	0	0 AFA	NY	SOUTHERN NEVADA WATER AUTHORITY
173B	79342			1/28/2010	RFP	UG	NE	SE	3 04N	55E		10 MUN			1/28/2010	0	0 AFA	NY	SOUTHERN NEVADA WATER AUTHORITY
173B	79343			1/28/2010	RFP	UG	SE	SE	13 03N	54E		10 MUN			1/28/2010	0	0 AFA	NY	SOUTHERN NEVADA WATER AUTHORITY
173B	79344			1/28/2010	RFP	UG	SE	NE	3 07N	57E		6 MUN			1/28/2010	0	0 AFA	NY	SOUTHERN NEVADA WATER AUTHORITY
173B	79345			1/28/2010	RFP	UG	SE	NW	15 07N	57E		6 MUN			1/28/2010	0	0 AFA	NY	SOUTHERN NEVADA WATER AUTHORITY
173B	7935		1387	11/19/1926	CER	SPR	NW	SE	30 08N	59E		0.022 STK			11/19/1926	9 2374	0 AFA	NY	GUSTAFSON, DEIL O.
173B	7936		1389	11/19/1926	CER	UG	NW	SE	5 09N	59E		0.022 STK			11/19/1926	9 0226	0 AFA	NY	GUSTAFSON, DEIL O.
173B	7937		1389	11/19/1926	CER	SPR	SW	NE	13 07N	58E		0.021 STK			11/19/1926	9 2067	0 AFA	NY	GUSTAFSON, DEIL O.
173B	7938		1390	11/19/1926	CER	SPR	NE	SW	23 08N	58E		0.022 STK			11/19/1926	9 2374	0 AFA	NY	GUSTAFSON, DEIL O.
173B	7941		2043	11/27/1926	CER	SPR	SW	NW	36 16N	57E		0.009 STK			11/27/1926	6 2606	0 AFA	WP	HALSTEAD-FORSGREN RANCHES, INC.
173B	7942		2044	11/27/1926	CER	SPR	NW	NW	4 15N	58E		0.009 STK			11/27/1926	6 2606	0 AFA	WP	HALSTEAD-FORSGREN RANCHES, INC.
173B	7944			11/27/1926	WDR	SPR	SE	SE	20 16N	58E		0.025 STK			11/27/1926	0		WP	HALSTEAD, ED
173B	7957		2222	12/24/1926	CER	SPR	NW	NW	23 14N	57E		0.019 STK			12/24/1926	13 871	0 AFA	WP	HALSTEAD-FORSGREN RANCHES, INC.
173B	79603			2/18/2010	RFP	UG	NE	SE	7 10N	58E		3.5 IRR			2/18/2010	1664	0 AFA	NY	RWD CURRANT CREEK LLC
173B	79604			2/18/2010	RFP	UG	NW	SE	8 10N	58E		10.6 IRR			2/18/2010	2560	0 AFA	NY	RWD CURRANT CREEK LLC
173B	7978			1/12/1927	WDR	SPR	NE	SW	1 14N	58E		0.025 STK			1/12/1927	0		WP	HALSTEAD, ED
173B	8028			3/11/1927	CAN	SPR	SE	NW	19 13N	59E		0.001 STK			3/11/1927	0.7058	0 AFA	WP	VANOVER, F.C.



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173B		8029		3/11/1927	CAN	SPR	SW	NE	12 12N	57E	0 001	STK			3/11/1927	0 7058	AFA	NY	VANOVER, F.C.
173B		8032		3/13/1927	WDR	SPR	NW	NE	14 09N	56E		0 STK			3/13/1927		0 AFA	NY	SHARP, GEORGE H.
173B		8033		3/13/1927	WDR	SPR	NE	SE	8 09N	57E		0 STK			3/13/1927		0 AFA	NY	SHARP, GEORGE H.
173B		8044		3/22/1927	CAN	SPR	NE	SW	28 08N	58E		0 STK			3/22/1927		0 AFS	NY	CAZIER BROS.
173B		8045		3/22/1927	CAN	SPR	SE	SE	27 07N	58E		0 STK			3/22/1927		0 AFS	NY	CAZIER BROTHERS
173B		8046		3/22/1927	WDR	SPR	NE	SW	15 11N	58E		0.5 IRR			3/22/1927		27 AFA	NY	MARTELLETTI BROS.
173B		8047	2061	3/22/1927	CER	SPR	NE	NE	30 11N	58E		0.036 IRR			3/22/1927		0 AFA	NY	DAVID WEAVER
173B		8048		3/22/1927	WDR	SPR	SW	SE	17 15N	58E		0 STK			3/22/1927		0 AFS	WP	HALSTEAD, ED
173B		8049		3/25/1927	CAN	UG	SW	NE	11 08N	56E		0 STK			3/25/1927		0	NY	SHARP, GEORGE
173B		8053		3/25/1927	DEN	UG	SE	SE	27 11N	58E		0.025 STK			3/25/1927	3 5599	AFA	NY	MANZONIE, JOHN
173B		8055		3/25/1927	CAN	SPR	SW	SW	12 11N	59E		0.025 STK			3/25/1927	1 4731	AFS	NY	MANZONIE, JOHN
173B		80842		5/9/2011	RFA	UG	SW	NE	35 15N	56E		1 MM			5/9/2011		0 AFA	WP	MIDWAY GOLD US INC
173B		80994	6554	7/22/2011	PER	SPR	SE	NE	24 08N	59E		0.025 STK			8/25/1921	10 61	AFA	NY	THE LITTLE PARIS SHEEP COMPANY
173B		80994	CHANGED BY:		RFA	SPR													
173B		81294	78270	11/4/2011	PER	UG	NW	NW	34 05N	55E		2.7 IRR		Y	1/21/1963	1280	AFA	NY	JENKINS FARMS LLC
173B		81692		3/22/2012	RFA	UG	NW	SE	8 10N	58E		1.165 IRR			6/16/1964	320	AFA	NY	DIELEMAN, RICHARD W
173B		81693	6165	3/22/2012	RFA	UG	NE	SE	7 10N	56E		0 1787 IRR			6/10/1920	85 776	AFA	NY	DIELEMAN, RICHARD W 28%
173B		8204		6/29/1927	CER	STR	SW	SE	36 16N	57E		0 043 MM			6/29/1927		0 AFA	WP	MORITTI, M.
173B		82040		8/6/2012	RFA	SPR	NW	SE	30 11N	56E		0.05 IRR			1/21/1993		0 AFA	NY	WEAVER, DAVID
173B		822		2/15/1908	CAN	SPR			05N	57E		0 IRR			2/15/1908	0		NY	BROUGH, JOHN H.
173B		82685		4/1/2013	RFA	UG	NE	SE	31 11N	56E		1.228 IRR			4/1/2013		0 AFA	NY	WEAVER, DAVID
173B		82691		4/4/2013	RFA	UG	SW	NE	35 15N	56E		1.6 MM			4/4/2013		0 AFA	WP	MIDWAY GOLD US INC
173B		83035T	32318	8/21/2013	PER	UG	NE	SE	31 11N	56E		0.89 IRR			6/27/1977		0 AFA	NY	WEAVER, DAVID
173B		8312		9/1/1927	CAN	SPR	SW	SW	25 16N	57E		0 MM			9/1/1927	0		WP	ANDERSON, JOHN
173B		8422		1792	1/5/1928	CER	SE	SE	12 07N	58E		0.003 STK			1/5/1928	2 7927	AFA	NY	SHARP, GEO. H.
173B		8423		1793	1/5/1928	CER	SW	NE	11 08N	56E		0.004 STK			1/5/1928	2 7927	AFA	NY	SHARP, GEO. H.
173B		8438	7787	1/25/1928	CAN	UG	NW	SE	5 06N	56E		0 STK			6/24/1926	0	AFA	NY	BORDOLI, A.F.
173B		8659		8/13/1928	CER	SPR	SW	NE	20 16N	56E		0.004 MM			8/13/1928	2 6393	AFA	WP	MCLEISH, MALCOLM
173B		8705		9/27/1928	CAN	SPR	NW	SW	9 04N	56E		0 QM			9/27/1928	0		NY	GARRETT, EMERY
173B		8711		10/5/1928	DEN	SPR	NE	SE	25 03N	59E		0.25 STK			10/5/1928	9 176	AFA	NY	BORDOLI, A.F.
173B		8778		12/15/1928	CER	STR	SW	SE	14 04N	55E		0.016 STK			12/15/1928	11 57	AFA	NY	CROSS L. RANCHES, LLC
173B		8779	2243	12/15/1928	CAN	SPR	SE	SW	19 03N	59E		0 STK			12/15/1928		0 AFA	NY	BORDOLI BROS.
173B		8780		12/15/1928	CAN	STR	NW	SW	19 03N	56E		0.016 STK			12/15/1928	0		NY	BORDOLI BROS.
173B		8928		6/3/1929	DEN	SPR	NW	SE	16 07N	56E		0 IRR			6/3/1929		0 AFS	NY	TITUS, HARVEY L.
173B		8997		7/21/1929	WDR	SPR	NW	NW	18 10N	55E		0 STK			7/21/1929		0 AFA	NY	VANCOVER, F.C.
173B		9039		8/28/1929	CER	UG	NW	SW	7 09N	56E		0.006 STK			8/28/1929	2 5779	AFA	NY	SHARP, GEORGE H.
173B		9085		10/11/1929	CER	SPR	NW	SW	8 04N	56E		0.003 STK			10/11/1929	2 2403	AFA	NY	CROSS L. RANCHES, LLC
173B		9175		11/27/1929	CAN	UG	NE	NW	16 10N	57E		0 STK			11/27/1929	0		NY	TIDBALL, GUY
173B		923		4/18/1908	CAN	SPR			05N	57E		8 MM			4/18/1908			NY	IRVIN, PAUL
173B		924		4/20/1908	CAN	SPR			05N	57E		10 MM			4/20/1908			NY	MANN, O.E.
173B		928		4/23/1908	CER	STR						0 IRR			4/23/1908	79 28	AFA	NY	RWD CURRANT CREEK, LLC UNDIV 72% AND
173B		9397		1990	1/8/1931	CER	SW	SW	5 11N	59E		0.01	STK		1/8/1931	8 685	AFA	NY	RICHARD W. DIELMAN 28%
							NW	NW	6 12N	58E								NY	FLORIO, A.C.
173B		9399		1989	1/8/1931	CER	NE	SE	6 12N	59E		0.622 IRR			1/8/1931	449	AFA	NY	USA, BUREAU OF INDIAN AFFAIRS, IN TRUST
173B		9408		1991	1/30/1931	CER	NW	SE	15 11N	55E		0.002 STK			1/30/1931	67 209	AFA	NY	FOR THE SHOSHONE INDIANS OF DUCKWATER
173B		9420		1992	3/4/1931	CER	NW	NW	1 14N	59E		0.004 STK			3/4/1931	3 253	AFA	NY	U.S.-BUREAU OF INDIAN AFFAIRS
173B		9426		1998	3/4/1931	CER	SE	SE	6 13N	55E		0.008 STK			3/4/1931	6 4416	AFA	NY	U.S.-BUREAU OF INDIAN AFFAIRS
173B		9455		2533	6/2/1931	CER	SE	SW	5 05N	57E		0.062 STK			6/2/1931	44 806	AFA	NY	CROSS L. RANCHES, LLC
																			BUREAU OF INDIAN AFFAIRS FOR SHOSHONE
173B		9504		2003	7/25/1931	CER	SW	NW	23 11N	59E		0.002 STK			7/25/1931	1 5958	AFA	NY	INDIANS OF DUCKWATER, NV
173B		9524		2244	9/4/1931	CER	NW	SW	34 05N	59E		0.02 STK			9/4/1931	14 485	AFA	NY	CROSS L. RANCHES, LLC
173B		9586			4/9/1932	ABR	STR	SE	SW	27 06N	57E	0 MM			4/9/1932	0		NY	OLD ENGLISH GOLD CORP.
173B		9586	CHANGED BY:																
173B		9589		10200															
173B		9589		4/18/1932	WDR	SPR	SE	SE	28 10N	59E		0.5 STK			4/18/1932			NY	MENDES, W.F.
173B		R05231		1/28/1991	RES	SPR	NE	NW	5 06N	57E		0.006 OTH			4/17/1926	4 4806	AFA	NY	BLM
173B		R05233		1/28/1991	RES	SPR	NW	NW	33 07N	57E		0.006 OTH			4/17/1926	4 4806	AFA	NY	BLM



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173B	R05234			1/28/1991	RES	SPR	SW	SW	28 07N	57E		0.006	OTH		4/17/1926	4.4806	AFA	NY	BLM
173B	R05235			1/28/1991	RES	SPR	NW	SW	28 07N	57E		0.006	OTH		4/17/1926	4.4806	AFA	NY	BLM
173B	R05236			1/28/1991	RES	SPR	SE	NE	14 06N	56E		0.006	OTH		4/17/1926		AFA	NY	BLM
173B	R05237			1/28/1991	RES	SPR	SW	NW	28 07N	57E		0.006	OTH		4/17/1926		AFA	NY	BLM
173B	R05244			2/25/1991	RES	SPR	NW	NW	33 07N	57E		0.006	OTH		4/17/1926		AFA	NY	BLM
173B	R05876			2/17/1993	RES	SPR	SW	SE	11 06N	54E		0.011	OTH		4/17/1926	7.9178	AFA	NY	BLM
173B	R05878			2/17/1993	RES	SPR	SE	NW	23 06N	54E		0.011	OTH		4/17/1926	7.9178	AFA	NY	BLM
173B	R05879			2/17/1993	RES	SPR	NW	SE	16 07N	55E		0.006	OTH		4/17/1926	5.3706	AFA	NY	BLM
173B	R05880			2/17/1993	RES	SPR	NW	NE	11 06N	54E		0.011	OTH		4/17/1926	7.9178	AFA	NY	BLM
173B	R05881			2/17/1993	RES	SPR	NE	SW	16 07N	55E		0.006	OTH		4/17/1926	4.5727	AFA	NY	BLM
173B	R05883			2/17/1993	RES	SPR	SE	NE	15 08N	55E		0.006	OTH		4/17/1926	4.5727	AFA	NY	BLM
173B	R05885			2/17/1993	RES	SPR	NW	SE	16 07N	55E		0.006	OTH		4/17/1926	4.5727	AFA	NY	BLM
173B	R06074			11/3/1993	RES	SPR	NW	NW	21 04N	52E		0.01	STK		4/17/1926	2.19	AFA	NY	BLM
173B	R06075			11/3/1993	RES	SPR	NE	SE	20 04N	52E		0.01	STK		4/17/1926	2.19	AFA	NY	BLM
173B	R06077			11/3/1993	RES	SPR	NW	SW	6 04N	53E		0.01	STK		4/17/1926	2.19	AFA	NY	BLM
173B	R06078			11/3/1993	RES	SPR	NE	SW	12 01N	54E		0.01	STK		4/17/1926	2.19	AFA	NY	BLM
173B	V00736			8/5/1909	VST	SPR	SE	SW	31 05N	57E		0	IRR		12/31/1897		AFA	NY	SHARP, NORMAN K
173B	V01270			12/10/1913	VST	SPR	SE	SW	33 15N	57E		0	IRR		12/31/1872		AFA	WP	HALSTEAD FORSGREN RANCHES
173B	V01325			7/8/1914	VST	SPR			31 11N	58E		0	IRR		01/01/1895	137.76	AFA	NY	DAVID WEAVER
173B	V01339			10/20/1914	VST	SPR									09/01/1869		AFA	NY	BUREAU OF INDIAN AFFAIRS-DUCKWATER SHOSHONE
173B	V01340			10/20/1914	VST	STR	SE	NW	35 11N	58E		0	IRR		12/31/1874		AFA	NY	JOHNSON, JAMES L.
173B	V01478			12/1/1916	VST	SPR	NE	SE	30 11N	56E		0.025	STK		12/31/1899		AFA	NY	TOGNOINI, J.C.
173B	V01481			12/1/1916	VST	SPR	SW	SE	20 13N	55E		0.037	STK		12/31/1889	0		NY	TOGNOINI, J.C.
173B	V01483			12/1/1916	VST	SPR	SE	SE	6 13N	55E		0.025	STK		12/31/1888	0		NY	TOGNOINI, J.C.
173B	V01485			12/1/1916	VST	SPR	NW	NW	1 14N	54E		0.025	STK		12/31/1879		AFA	NY	FLORIO, A.C.
173B	V01638			7/1/1919	DEC	SPR	SW	SE	4 10N	58E			4 DEC				AFA	NY	RWD CURRANT CREEK, LLC 72% AND JAT CURRANT CREEK, LLC
173B	V01640			10/17/1919	DEC	SPR	SE	SE	26 11N	58E		1.063	DEC				AFA	NY	DECATUR 215, LLC
173B	V01641			10/17/1919	DEC	SPR													RWD CURRANT CREEK, LLC AND RICHARD W. DIELMAN
173B	V01642			10/17/1919	DEC	SPR													RWD CURRANT CREEK, LLC AND RICHARD W. DIELMAN
173B	V01647			11/1/1919	DEC	SPR	NW	SW	19 11N	59E			2 DEC				AFA	NY	RWD CURRANT CREEK, LLC AND RICHARD W. DIELMAN
173B	V01760			3/21/1921	VST	STR	NE	SW	21 12N	56E		7	IRR		01/01/1874		AFA	NY	HALSTEAD FORSGREN RANCHES
173B	V01763			4/14/1921	VST	STR	NE	NW	17 12N	56E			4 2 IRR		03/01/1868		AFA	NY	BUREAU OF INDIAN AFFAIRS-DUCKWATER SHOSHONE
173B	V01853			9/22/1924	VST	STR	SW	NE	28 12N	58E			0 IRR		01/01/1868		AFA	NY	HALSTEAD FORSGREN RANCHES
173B	V02152			12/8/1927	VST	SPR	NE	SE	25 03N	54E		0.25	STK		12/31/1899		AFA	NY	REGIONAL AGRICULTURAL CREDIT CORP.
173B	V02209			12/15/1928	VST	SPR	SE	SE	4 05N	56E		0.025	STK		1/1/1900	8.9612	AFA	NY	SHARP, GERALD HOWARD
173B	V02209			9/16/1929	VST	SPR	NW	NW	36 12N	57E		0.05	STK		12/31/1890	8.9612	AFA	NY	BRADSHAW, KARL
173B	V02209			9/16/1929	VST	SPR	NW	NW	16 10N	55E		0.05	STK		01/01/1880	8.9612	AFA	NY	BRADSHAW, KARL
173B	V02247			9/4/1931	VST	SPR	NE	SW	23 06N	54E		0.1	STK		01/01/1898		AFA	NY	BORDOLI BROS.
173B	V02249			9/4/1931	VST	STR	NE	SW	5 05N	57E			1 STK		01/01/1898		AFA	NY	SHARP, GERALD HOWARD
173B	V02249			9/4/1931	VST	SPR	SW	NE	11 06N	54E		0.025	STK		01/01/1898		AFA	NY	BORDOLI BROS.
173B	V02341			2/10/1947	VST	STR			12 06N	56E		0.25	STK		12/31/1879		AFA	NY	SHARP, GERALD HOWARD
173B	V02353			9/20/1948	VST	SPR	SE	SE	23 04N	55E		0.25	STK		01/01/1880		AFA	NY	SHARP, GERALD HOWARD
173B	V02426			6/12/1957	VST	UG	NW	SE	11 08N	57E		3.22	IRR		1/1/1900		AFA	NY	CROSS L. RANCHES, LLC
173B	V02448			10/23/1959	VST	SPR	NW	SE	5 09N	59E		0.02	STK		1/1/1917	10.71	AFS	NY	GARRETT, CLARA MAUDE
173B	V02448			10/23/1959	VST	SPR	NW	NE	25 13N	57E		0.016	STK				AFA	NY	BRADSHAW, BARRY KARL AND NORMA J.
173B	V02445			10/23/1959	VST	SPR	NW	NW	6 12N	58E		0.11	STK				AFA	NY	BRADSHAW, BARRY KARL AND NORMA J.
173B	V02448			10/23/1959	VST	SPR	NW	NW	19 10N	55E		0.022	STK				AFA	NY	BRADSHAW, BARRY KARL & NORMA J.
173B	V02447			10/23/1959	VST	SPR	SW	SW	31 10N	56E		0.011	STK				AFA	NY	BRADSHAW, BARRY KARL & NORMA J.
173B	V02448			10/23/1959	VST	SPR	NW	SE	7 10N	55E		0.011	STK		01/01/1868		AFA	NY	BRADSHAW, KARL
173B	V02533			6/19/1964	VST	SPR	SW	NE	15 08N	55E		4.5	IRR		01/01/1885	3257.9	AFA	NY	MURPHEY, MOBILE GLASS: CANYON CREEK
173B	V02534			6/19/1964	VST	SPR	NE	NE	15 08N	55E		3.5	IRR		01/01/1885	2533.9	AFA	NY	NEVADA STATE LANDS



Nevada Division of Water Rights Database, Hydrographic Abstract Advanced Search, Basin 173B Railroad Valley/Northern Part

Basin	App	Change App.	Cert	File Date	Status <sup>1</sup>	Source <sup>2</sup>	POD Qtr	POD Qtr	POD Sec	POD Twn	POD Rng	Div Rate (CFS)	Type of Use	Sup	Priority Date	Annual Duty	Units <sup>3</sup>	County	Owner of Record
173B	V02535			6/19/1964	VST	SPR	SE	NE	15 08N	55E		1.3	IRR		01/01/1885	941.16	AFA	NY	NEVADA STATE LANDS
173B	V02536			6/19/1964	VST	SPR	SW	NW	14 08N	55E		2	IRR		01/01/1885	1447.9	AFA	NY	NEVADA STATE LANDS
173B	V02537			6/19/1964	VST	SPR	SE	NE	15 08N	55E		3	IRR		01/01/1885	2171.9	AFA	NY	NEVADA STATE LANDS
173B	V02878			6/23/1976	VST	SPR	SE	SE	11 08N	57E		0.465	IRR		01/01/1896	0	AFA	NY	CROSS L. RANCHES LLC
173B	V02879			6/23/1976	VST	SPR	SE	SE	11 08N	57E		0.272	IRR		1/1/1904	0		NY	HANKS, CARL J
173B	V02880			6/23/1976	VST	SPR	NE	SE	27 08N	57E		0.506	IRR		01/01/1895	0		NY	HANKS, CARL J
173B	V03183			7/26/1979	VST	SPR	NE	SW	16 07N	55E		0.016	STK		01/01/1873	0		NY	BLM
173B	V03184			7/26/1979	VST	SPR	NW	SE	16 07N	55E		0.016	STK		01/01/1873	0		NY	BLM
173B	V03185			7/26/1979	WDR	SPR	NW	SE	16 07N	55E		0.016	STK		01/01/1873	0		NY	BLM
173B	V03952			5/21/1982	VST	OSW	NE	NE	32 16N	58E		0.015	STK		05/01/1873	0	AFA	WP	U.S.-FOREST SERVICE
173B	V03953			5/21/1982	VST	OSW	NE	SE	29 16N	58E		0.015	STK		01/01/1873	0	AFA	WP	U.S.-FOREST SERVICE
173B	V03954			5/21/1982	VST	OSW	SE	NE	32 16N	58E		0.015	STK		01/01/1873	0	AFA	WP	U.S.-FOREST SERVICE
173B	V03955			5/21/1982	VST	OSW	SE	SW	33 16N	58E		0.015	STK		05/01/1873	0	AFA	WP	U.S.-FOREST SERVICE
173B	V03956			5/21/1982	VST	OSW	SW	SE	9 15N	58E		0.015	STK		01/01/1873	0	AFA	WP	U.S.-FOREST SERVICE
173B	V03957			5/21/1982	VST	OSW	NW	SE	4 15N	58E		0.015	STK		01/01/1873	0	AFA	WP	U.S.-FOREST SERVICE
173B	V03958			5/21/1982	VST	SPR	NE	NE	20 16N	58E		0.015	STK		05/01/1873	0	AFA	WP	U.S.-FOREST SERVICE
173B	V03959			5/21/1982	VST	SPR	NW	SE	20 16N	58E		0.015	STK		05/01/1873	0	AFA	WP	U.S.-FOREST SERVICE
173B	V03960			5/21/1982	VST	SPR	NW	NE	20 16N	58E		0.015	STK		01/01/1873	0	AFA	WP	U.S.-FOREST SERVICE
173B	V03961			5/21/1982	VST	SPR	SW	NE	32 16N	58E		0.015	STK		01/01/1873	0	AFA	WP	U.S.-FOREST SERVICE
173B	V03962			5/21/1982	VST	SPR	NE	SE	32 16N	58E		0.015	STK		01/01/1873	0	AFA	WP	U.S.-FOREST SERVICE
173B	V03963			5/21/1982	VST	SPR	NW	SW	28 16N	58E		0.015	STK		01/01/1873	0	AFA	WP	U.S.-FOREST SERVICE
173B	V04668			5/27/1988	VST	SPR	NW	SE	20 04N	52E		0.032	STK		01/01/1870	0	AFA	NY	HELEN FALLINI LIVING TRUST & FALLINI 1983
173B	V04669			5/27/1988	VST	SPR	NW	NW	21 04N	52E		0.032	STK		01/01/1870	0	AFA	NY	HELEN FALLINI LIVING TRUST & FALLINI 1983
173B	V04670			5/27/1988	VST	SPR	NE	SW	12 04N	52E		0.032	STK		01/01/1870	0	AFA	NY	HELEN FALLINI LIVING TRUST & FALLINI 1983
173B	V04671			5/27/1988	VST	SPR	NW	SW	6 04N	53E		0.032	STK		01/01/1870	0	AFA	NY	HELEN FALLINI LIVING TRUST & FALLINI 1983
173B	V09111			7/23/1999	VST	SPR	SE	SE	11 08N	57E		3.013	IRR		1/1/1900	1184	AFA	NY	CROSS L. RANCHES LLC
173B	V09394			5/15/2003	VST	SPR	NE	NE	9 12N	55E		0.0155	STK		1/1/1900	0	AFA	NY	HALSTEAD-FORSGREN RANCHES, INC.
173B	V09856			11/4/2009	VST	STR	SW	NW	25 14N	56E		0.0124	STK		1/1/1900	0	AFA	WP	BLUE DIAMOND OIL CORPORATION

Source: NDWR-Water Rights Database Advanced Search (Special Hydrographic Abstract) (Nevada Division of Water Resources 2014)

Notes:

1 - Status: ABR=abrogated; CAN=canceled; CER=certified; DEC=decreed; DEN=denied; EXP=expired; FOR=forfeited; PER=permit; RES=reserved; RFA=ready for action (protested); VST=vested right; WDR=withdrawn

2 - Source: OSW=other surface water; RES=reservoir; SPR=spring; STR=stream; UG=underground/well

3 - Units: AFA=acre-feet annually; AFS=acre-feet seasonally

POD - point of diversion











Appendix 3B. List of Scientific Names for Plant Species Noted in the Draft Environmental Impact Statement for the Gold Rock Mine Project

Common Name	Scientific Name	Status
alkali sacaton	<i>Sporobolus airoides</i>	--
alkali sagebrush	<i>Artemisia arbuscula</i> ssp. <i>longiloba</i>	--
antelope bitterbrush	<i>Purshia tridentata</i>	--
beehive cactus	<i>Coryphantha vivipara</i>	--
(basin) big sagebrush	<i>Artemisia tridentata</i> ssp. <i>tridentata</i>	--
(Wyoming) big sagebrush	<i>Artemisia tridentata</i> ssp. <i>wyomingensis</i>	--
black sagebrush	<i>Artemisia nova</i>	--
Blaine pincushion	<i>Sclerocactus blainei</i>	SC, S
blue (purple) mustard	<i>Chorisporea tenella</i>	W
bluebunch wheatgrass	<i>Pseudoroegneria spicata</i>	--
bud sage	<i>Artemisia spinescens</i>	--
bur buttercup	<i>Ranunculus testiculatus</i>	--
Chamber's twinpod	<i>Physaria chambersii</i>	--
cheatgrass	<i>Bromus tectorum</i>	W
claret-cup cactus	<i>Echinocereus triglochidiatus</i> var. <i>mojavensis</i>	--
clasping pepperweed	<i>Lepidium perfoliatum</i>	W
desert green gentian	<i>Frasera albomarginata</i>	--
downy rabbitbrush	<i>Chrysothamnus viscidiflorus</i> ssp. <i>puberulus</i>	--
Drummond's false pennyroyal	<i>Hedeoma drummondii</i>	--
dwarf goldenbush	<i>Ericameria nana</i>	--
dwarf peppergrass	<i>Lepidium nanum</i>	--
Eastwood milkweed, Eastwood's milkvetch	<i>Asclepias eastwoodiana</i>	SC, S
elongated mustard	<i>Brassica elongata</i>	W
four-wing saltbush	<i>Atriplex canescens</i>	--
greasewood	<i>Sarcobatus vermiculatus</i>	--
Great Basin wild-rye	<i>Leymus (Elymus) cinereus</i>	--
gumweed aster	<i>Xanthisma (Machaeranthera) grindelioides</i> var. <i>depressum</i>	--
halogeton	<i>Halogeton glomeratus</i>	W
heartleaf twistflower	<i>Streptanthus cordatus</i>	--
herb sophia	<i>Descurainia sophia</i>	--
horsebrush	<i>Tetradymia</i> spp.	--
Indian ricegrass	<i>Achnatherum hymenoides</i>	--
Jaeger's beardtongue	<i>Penstemon thompsoniae</i> ssp. <i>jaegeri</i>	S
Joshua tree	<i>Yucca brevifolia</i>	--
Kentucky bluegrass	<i>Poa pratensis</i>	--
littleleaf mountain mahogany	<i>Cercocarpus intricatus</i>	--
low feverfew	<i>Parthenium ligulatum</i>	S
Masonic rockcress, sagebrush rockcress	<i>Boechera (Arabis) cobrensis</i>	--
mormon tea	<i>Ephedra viridis</i>	--
Needle Mountains milkvetch	<i>Astragalus eurylobus</i>	S
needle-and-thread	<i>Hesperostipa comata</i>	--
Nevada jointfir	<i>Ephedra nevadensis</i>	--
Sandberg bluegrass	<i>Poa secunda</i>	--
parish phacelia	<i>Phacelia parishii</i>	SC, S
plains prickly-pear	<i>Opuntia polyacantha</i>	--



Common Name	Scientific Name	Status
rayless tansy aster	<i>Machaeranthera grindelioides</i> var. <i>depressa</i>	--
rock spiraea	<i>Petrophytum caespitosum</i>	--
rubber rabbitbrush	<i>Ericameria nauseosa</i> ssp. <i>hololeuca</i>	--
Russian knapweed	<i>Acroptilon repens</i>	W
sand (club-) cholla	<i>Grusonia</i> ( <i>Opuntia</i> ) <i>pulchella</i>	S
shadscale	<i>Atriplex confertifolia</i>	--
Shockley's rockcress	<i>Boechera shockleyi</i> , <i>Arabis shockleyi</i>	--
Simpson's buckwheat	<i>Eriogonum. microthecum</i> var. <i>simpsonii</i>	--
Simpson's plains-cactus	<i>Pediocactus simpsonii</i>	--
singleleaf pinyon	<i>Pinus monophylla</i>	--
broom snakeweed	<i>Gutierrezia sarothrae</i>	--
spiny hopsage	<i>Grayia spinosa</i>	--
squirreltail	<i>Elymus elymoides</i>	--
stalked whitlow-grass	<i>Draba pedicellata</i> var. <i>pedicellata</i>	--
Stansbury's cliffrose	<i>Purshia stansburiana</i>	--
starveling milkvetch	<i>Astragalus jejunus</i> var. <i>jejunus</i>	--
stemless mock goldenweed	<i>Stenotis acaulis</i>	--
Step toe Valley beardtongue	<i>Penstemon immanifestus</i>	--
sulphur-flower buckwheat	<i>Eriogonum umbellatum</i> var. <i>dichrocephalum</i>	--
tamarisk (salt cedar)	<i>Tamarix ramosissima</i>	W
thickstem wild cabbage	<i>Caulanthus crassicaulis</i>	--
Torrey's milkvetch	<i>Astragalus calycosus</i> var. <i>monophyllidius</i>	S
tumble mustard	<i>Sisymbrium altissimum</i>	W
Utah juniper	<i>Juniperus osteosperma</i>	--
Welsh's cryptantha	<i>Cryptantha welshii</i>	--
western wheatgrass	<i>Pascopyrum smithii</i>	--
whitetop/hoary cress	<i>Cardaria draba</i> , <i>Cardaria chalepensis</i> , <i>Lepidium draba</i> , and <i>Lepidium draba</i> ssp. <i>chalepensis</i>	W
winterfat	<i>Krascheninnikovia lanata</i>	--
yellow rabbitbrush	<i>Chrysothamnus viscidiflorus</i> (mostly ssp. <i>puberulus</i> )	--

Notes:

BLM – Bureau of Land Management Ely District

USFWS – US Fish and Wildlife Service

C – candidate for listing under Endangered Species Act

SC – listed as species of concern by USFWS

S – BLM sensitive in state of Nevada

W – Noxious Weed/Introduced Invasive



## List of Scientific Names for Wildlife Species Described in the Draft Environmental Impact Statement for the Gold Rock Mine Project







Appendix 3C. List of Scientific Names for Wildlife Species Noted in the Draft Environmental Impact Statement for the Gold Rock Mine Project

Common Name	Scientific Name	Status
<b>Big Game</b>		
elk	<i>Cervus canadensis</i>	
mule deer	<i>Odocoileus hemionus</i>	
pronghorn antelope	<i>Antilocapra americana</i>	
bighorn Sheep	<i>Ovis canadensis</i>	BLM Sensitive
<b>Small Mammals</b>		
black-tailed jackrabbit	<i>Lepus californicus</i>	
cliff chipmunk	<i>Eutamias dorsalis</i>	
deer mouse	<i>Peromyscus maniculatus</i>	
desert cottontail	<i>Sylvilagus audubonii</i>	
kangaroo rat	<i>Dipodomys sp.</i>	
white-tailed antelope ground squirrel	<i>Ammospermophilus leucurus</i>	
woodrat	<i>Neotoma spp.</i>	
pygmy rabbit	<i>Brachylagus idahoensis</i>	BLM Sensitive
dark kangaroo mouse	<i>Microdipodops megacephalus</i>	BLM Sensitive, Nevada Protected
pale kangaroo mouse	<i>Microdipodops pallidus</i>	BLM Sensitive, Nevada Protected
big brown bat	<i>Eptesicus fuscus</i>	BLM Sensitive
Brazilian free-tailed bat	<i>Tadarida brasiliensis</i>	BLM Sensitive, Nevada Protected
California myotis	<i>Myotis californicus</i>	BLM Sensitive
fringed myotis	<i>Myotis thysanodes</i>	BLM Sensitive, Nevada Protected
hoary bat	<i>Lasiurus cinereus</i>	BLM Sensitive
little brown myotis	<i>Myotis lucifugus</i>	BLM Sensitive
long-eared myotis	<i>Myotis evotis</i>	BLM Sensitive
long-legged myotis	<i>Myotis volans</i>	BLM Sensitive
pallid bat	<i>Antrozous pallidus</i>	BLM Sensitive, Nevada Protected
silver-haired bat	<i>Lasionycteris noctivagans</i>	BLM Sensitive
spotted bat	<i>Euderma maculatum</i>	BLM Sensitive, Nevada Protected
Townsend's big-eared bat	<i>Corynorhinus townsendii</i>	BLM Sensitive, Nevada Protected
western pipistrelle	<i>Pipistrellus hesperus</i>	BLM Sensitive
western red bat	<i>Lasiurus blossevillii</i>	BLM Sensitive, Nevada Protected
western small-footed myotis	<i>Myotis ciliolabrum</i>	BLM Sensitive
Yuma myotis	<i>Myotis yumanensis</i>	BLM Sensitive
<b>Predatory Mammals</b>		
badger	<i>Taxidea taxus</i>	
bobcat	<i>Lynx rufus</i>	
coyote	<i>Canis latrans</i>	
gray fox	<i>Urocyon cinereoargenteus</i>	
kit fox	<i>Vulpes macrotis</i>	
mountain lion	<i>Puma concolor</i>	
red fox	<i>Vulpes vulpes</i>	
<b>Reptiles</b>		
desert horned lizard	<i>Phrynosoma platyrhinos</i>	
Great Basin gopher snake	<i>Pituophis catenifer deserticola</i>	
Great Basin rattlesnake	<i>Crotalus viridis lutosus</i>	



Common Name	Scientific Name	Status
greater short-horned lizard	<i>Phrynosoma hernandesi</i>	
side-blotched lizard	<i>Uta stansburiana</i>	
western fence lizard	<i>Sclerophorus occidentalis</i>	
western rattlesnake	<i>Crotalus viridis</i>	
<b>Fish</b>		
Railroad Valley springfish	<i>Crenichthys nevadae</i>	Federally Threatened
<b>Upland Game Birds</b>		
mourning dove	<i>Zenaida macroura</i>	
chukar	<i>Alectoris chukar</i>	
greater sage grouse	<i>Centrocercus urophasianus</i>	Federal Candidate, USFWS Bird of Conservation Concern, BLM Sensitive, Nevada Protected
<b>Migratory Birds</b>		
American kestrel	<i>Falco sparverius</i>	
American robin	<i>Turdus migratorius</i>	
bald eagle	<i>Haliaeetus leucocephalus</i>	Bald and Golden Eagle Protection Act, USFWS Bird of Conservation Concern, BLM Sensitive, Nevada Protected
barn owl	<i>Tyto alba</i>	
black rosy-finch	<i>Leucosticte atrata</i>	USFWS Bird of Conservation Concern, BLM Sensitive
blue-headed vireo	<i>Vireo solitarius</i>	
Brewer's sparrow	<i>Spizella breweri</i>	USFWS Bird of Conservation Concern, BLM Sensitive, Nevada Protected
brown creeper	<i>Certhia americana</i>	
burrowing owl	<i>Athene cunicularia</i>	
calliope hummingbird	<i>Stellula calliope</i>	USFWS Bird of Conservation Concern
Cassin's finch	<i>Carpodacus cassinii</i>	
Cooper's hawk	<i>Accipiter cooperii</i>	
duky flycatcher	<i>Empidonax oberholseri</i>	
eared grebe	<i>Podiceps nigricollis</i>	USFWS Bird of Conservation Concern
ferruginous hawk	<i>Buteo regalis</i>	USFWS Bird of Conservation Concern, BLM Sensitive
flamulated owl	<i>Otus flammeolus</i>	
golden eagle	<i>Aquila chrysaetos</i>	Bald and Golden Eagle Protection Act, USFWS Bird of Conservation Concern, BLM Sensitive, Nevada Protected
great blue heron	<i>Ardea herodias</i>	
great horned owl	<i>Bubo virginianus</i>	
green-tailed towhee	<i>Pipilo chlorurus</i>	USFWS Bird of Conservation Concern
hairy woodpecker	<i>Picoides villosus</i>	
hermit thrush	<i>Catharus guttatus</i>	
horned lark	<i>Eremophila alpestris</i>	
lesser goldfinch	<i>Carduelis psaltria</i>	
Lewis's woodpecker	<i>Melanerpes lewis</i>	USFWS Bird of Conservation Concern
loggerhead shrike	<i>Lanius ludovicianus</i>	USFWS Bird of Conservation Concern, BLM Sensitive, Nevada Protected
long-billed curlew	<i>Numenius americanus</i>	USFWS Bird of Conservation Concern



Common Name	Scientific Name	Status
long-eared owl	<i>Asio otus</i>	
merlin	<i>Falco columbarius</i>	
northern goshawk	<i>Accipiter gentilis</i>	BLM Sensitive, Nevada Protected
northern harrier	<i>Circus cyaneus</i>	
northern saw-whet owl	<i>Aegolius acadicus</i>	
osprey	<i>Pandion haliaetus</i>	
peregrine falcon	<i>Falco peregrinus anatum</i>	USFWS Bird of Conservation Concern, BLM Sensitive, Nevada Protected
pinyon jay	<i>Gymnorhinus cyanocephalus</i>	USFWS Bird of Conservation Concern, BLM Sensitive, Nevada Protected
prairie falcon	<i>Falco mexicanus</i>	
red crossbill	<i>Loxia curvirostra</i>	
red-tailed hawk	<i>Buteo jamaicensis</i>	
rough-legged hawk	<i>Buteo lagopus</i>	
sage sparrow	<i>Amphispiza belli</i>	USFWS Bird of Conservation Concern
sage thrasher	<i>Oreoscoptes montanus</i>	USFWS Bird of Conservation Concern, BLM Sensitive, Nevada Protected
sharp-shinned hawk	<i>Accipiter striatus</i>	
short-eared owl	<i>Asio flammeus</i>	
snowy plover	<i>Charadrius alexandrinus</i>	USFWS Bird of Conservation Concern
swainson's hawk	<i>Buteo swainsoni</i>	BLM Sensitive
turkey vulture	<i>Cathartes aura</i>	
violet-green swallow	<i>Tachycineta thalassina</i>	
Virginia's warbler	<i>Oreothlypis virginiae</i>	USFWS Bird of Conservation Concern
warbling vireo	<i>Vireo gilvus</i>	
western burrowing owl	<i>Athene cunicularia</i>	BLM Sensitive
western screech owl	<i>Megascops kennicottii</i>	
western tanager	<i>Piranga ludoviciana</i>	
white-breasted nuthatch	<i>Sitta carolinensis</i>	
yellow warbler	<i>Dendroica petechia</i>	
yellow-bellied sapsucker	<i>Sphyrapicus varius</i>	
yellow-rumped warbler	<i>Dendroica coronata</i>	

Notes:

BLM – Bureau of Land Management Ely District

USFWS – US Fish and Wildlife Service







# Appendix 3D

## Visual Contrast Rating Worksheets







UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT  
**VISUAL CONTRAST RATING WORKSHEET**


Date: 8/15/2014

District/ Field Office: Ely District/Eagan FO

Resource Area: Ely District, NV

Activity (program): Mining

## SECTION A. PROJECT INFORMATION

1. Project Name Midway Gold Rock EIS	4. Location Township <u>16N</u>	5. Location Sketch 
2. Key Observation Point <b>KOP 1 / GPS NEW South:</b> Looking south on CR 1177 (Easy Junior Road) at a high point near the Plan area boundary. This location is located approximately 3 miles from the proposed waste rock disposal areas.	Range <u>56E</u>	
3. VRM Class IV	Section <u>16</u>	

## SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

1. LAND/WATER		2. VEGETATION	3. STRUCTURES
FORM	Foreground: Flat, vertical Mid ground: Low, rounded, gently sloping Background: High, pyramidal and rounded (Easy and Meridian Ridges)	Low, rounded, sparse and dense (scrub brush)	Linear, rectangular (existing unpaved county road)
LINE	Vertical, diagonal and curved	Rugged, irregular	Low and diagonal
COLOR	Tan (patches of bare ground in foreground), dark gray (escarpment in background)	Dark green and sage green (scrub brush and grasses)	Tan (existing unpaved county road)
TEX-TURE	Fine to medium	Medium to coarse	Smooth to medium

## SECTION C. PROPOSED ACTIVITY DESCRIPTION

		2. VEGETATION	3. STRUCTURES
FORM	Flat to rounded landforms introduced in the middleground area from the north and south waste rock disposal areas (WRDAs) and the heap leach pile.	Landforms introduced by the proposed project would not be vegetated during operations.	Proposed activity structures would not be visible from this KOP. No change to existing road.
LINE	Near horizontal and irregular lines at the skyline	The proposed landforms would create irregular, thin to wide lines of unvegetated surfaces.	Proposed activity structures would not be visible from this KOP. No change to existing road.
COLOR	The north and south WRDAs would appear dark brown. The proposed heap leach pile would be medium to light brown.	The brown colors of the proposed unvegetated landforms would contrast with the green color of the existing surrounding vegetation cover.	Proposed activity structures would not be visible from this KOP. No change to existing road.
TEX-TURE	Fine to medium	Fine to medium texture of proposed landforms would contrast with the medium to coarse texture of the existing surrounding vegetation cover.	Proposed activity structures would not be visible from this KOP. No change to existing road.



SECTION D. CONTRAST RATING    SHORT TERM   X   LONG TERM

DEGREE OF CONTRAST		FEATURES												2. Does project design meet visual resource management objectives? <u>  X  </u> Yes <u>      </u> No (Explain on reverses side)
		LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)				
		STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE	
ELEMENTS	FORM		X				X						X	3. Additional mitigating measures recommended <u>      </u> Yes <u>  X  </u> No (Explain on reverses side)  Evaluator's Names Date: 8/2014 Kathryn Cloutier, ARCADIS
	LINE		X				X						X	
	COLOR	X					X						X	
	TEXTURE	X					X						X	

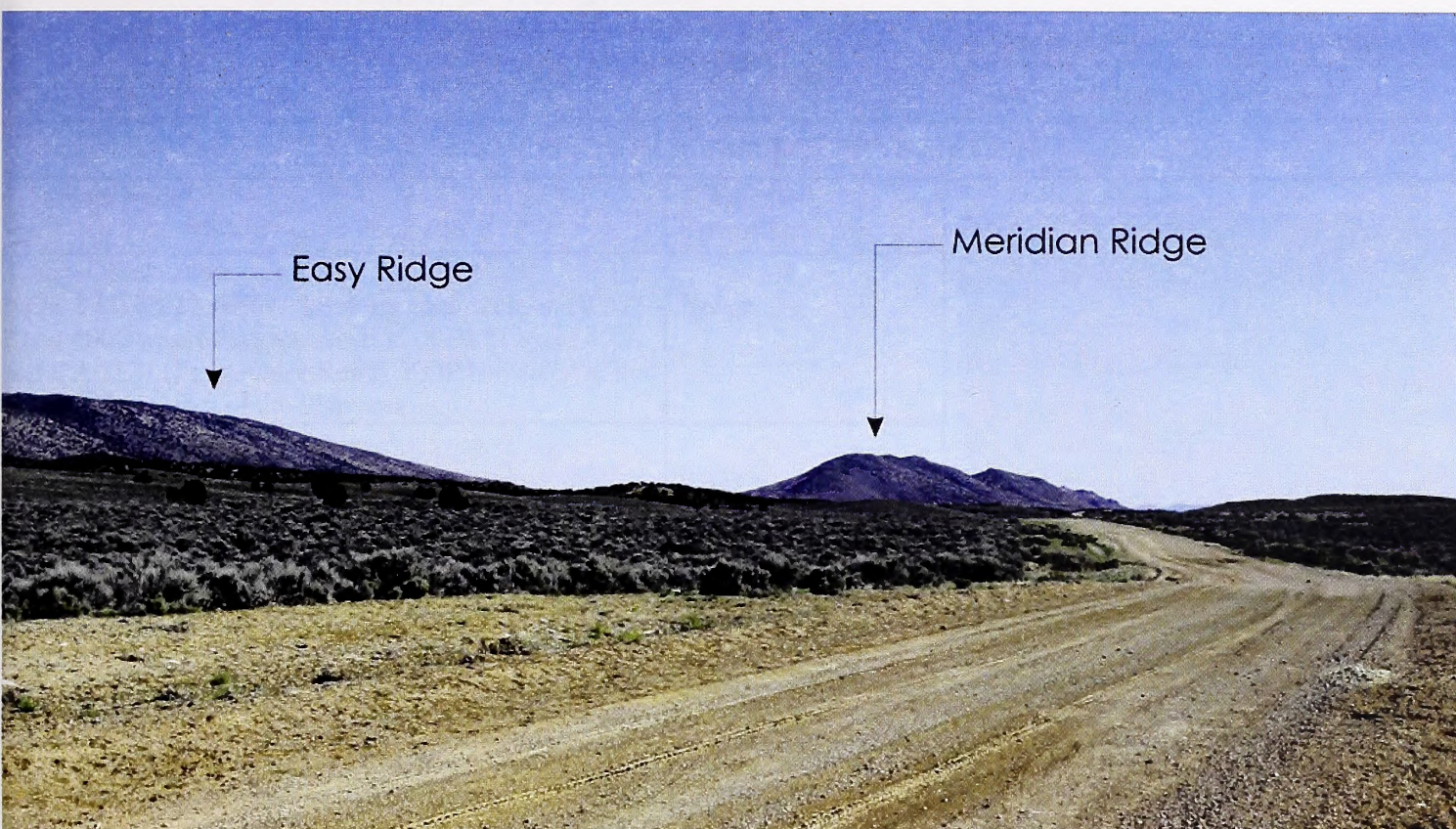
## SECTION D. (Continued)

Comments from item 2.

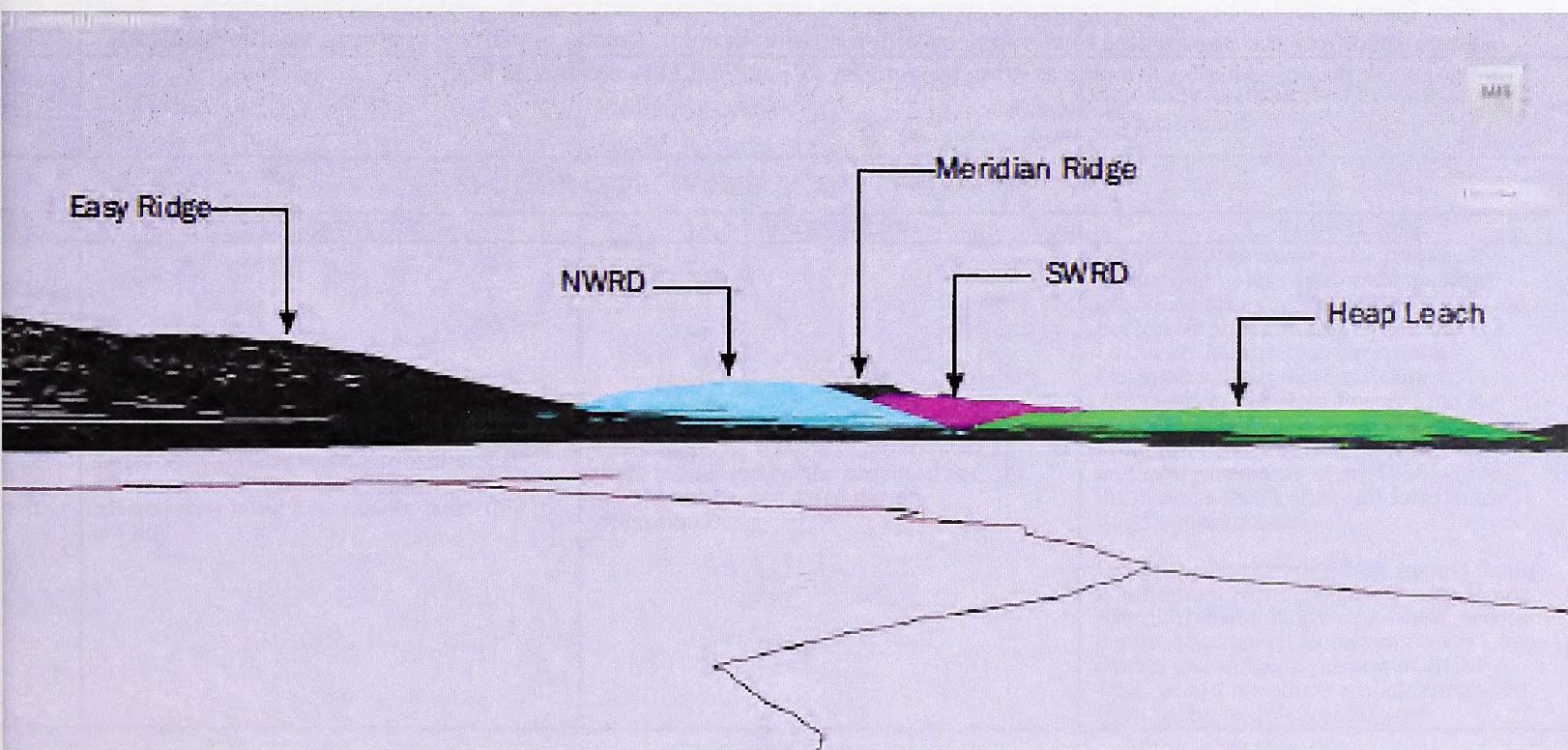
The portions of the proposed north and south WRDAs and heap leach pile that would be visible from KOP 1 (looking south) are located in an area designated as VRM Class IV. The proposed facilities would introduce flat to rounded, horizontal landforms at the skyline in the middleground area approximately 3 miles from the KOP. The proposed landforms would not be vegetated during operations; therefore, the brown colors and fine to medium texture of the unvegetated landforms would contrast with the green colors and medium to coarse textures of the existing surrounding vegetation cover. The proposed activity would result in a moderate to strong degree of contrast in form, line, color and texture relative to the elements of the existing landscape in the surrounding middleground area. This viewpoint would be observed by travelers on CR 1177. The proposed WRDAs and heap leach pile would conform to the management objectives of VRM Class IV.



Existing Conditions GPS NEW looking south



Wire frame model of GPS NEW looking south <sup>1</sup>





Additional Mitigating Measures (See item 3)

No mitigating measures are recommended.

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Notes:

- 1 A wire frame model is a computer-generated representation of a photographic view. In a wire frame model, the mine facilities are distinguished from the surrounding topography by differentiation in color, usually in extreme contrasts, in order to clearly delineate the proposed action from the existing topography (ViewPoint Services Inc. 2012).



UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT  
**VISUAL CONTRAST RATING WORKSHEET**


Date: 8/15/2014

District/ Field Office: Ely, NV

Resource Area:

Activity (program): Mining

## SECTION A. PROJECT INFORMATION

1. Project Name Midway Gold Rock EIS	4. Location Township <u>16N</u>	5. Location Sketch 
2. Key Observation Point <b>KOP 2 / GPS 18 NEW:</b> Looking southwest on BLM Road 4006 west of the intersection of BLM Road 4006 and CR 1177 (Easy Junior Road). KOP is located at the northern boundary of the Plan area.	Range <u>56E</u>	
3. VRM Class IV	Section <u>32</u>	

## SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Foreground: Flat to rolling Mid ground: Low, rounded, gently sloping Background: High, angular hills and ridges	Medium height (juniper) Low, rounded, sparse and dense (sagebrush and forbs)	Linear, rectangular (existing unpaved road)
LINE	Vertical, diagonal and curved	Rugged, irregular	Low and horizontal
COLOR	Tan (patches of bare ground in foreground), gray and blue hills (in background). The unvegetated areas near the existing unpaved road are light brown.	Sage green (scrub brush), dark green (juniper trees in background)	Light brown (existing unpaved road)
TEXTURE	Fine to medium	Medium to coarse	Smooth to coarse and dull existing road in the foreground

## SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	None of the proposed activity landforms (waste rock disposal areas, heap leach pile or other land alterations) would be visible from this KOP.	Portions of the widened portion of BLM 4006 introduced by the proposed activity would not be vegetated during operations.	<p>Under all alternatives, the proposed power line poles (monopoles) would introduce thin vertical forms low on the horizon in the middleground area.</p> <p>Under all alternatives except the Northwest Main Access Route Alternative, Northern Power Line Route and Northwest Main Access Route, Southern Power Line Route, the widened portion of BLM 4006 would introduce a thin horizontal form in the middleground area.</p> <p>Under the Northwest Main Access Route Alternative, Northern Power Line Route Alternative and Northwest Main Access Route Alternative, Southern Power Line Route, the widened portion of BLM 4006 would introduce a thick horizontal form in the middleground area.</p>







KOP 2 is at the northern boundary of the Plan area looking southwest on BLM 4006, west of the intersection of BLM 4006 and CR 1177 (Easy Junior Road).

Under all alternatives, the one or two poles at the start of the proposed power line that would be visible from KOP 2. The proposed power line poles visible from KOP 2 are located in an area designated as VRM Class IV. The proposed power line poles would introduce thin vertical lines in the middleground area approximately 2 miles in the distance. The proposed activity would result in a weak to moderate degree of contrast in form, line, color and texture relative to the elements of the existing landscape in the surrounding middleground area because the power line poles would be more than 3 miles away, low on the horizon, and are anticipated to blend into the horizon and be difficult to discern from the background. This KOP would be observed by casual observers traveling on BLM Road 4006 and on CR 1177. The proposed power line components would conform to the management objectives of VRM Class IV.

Under the Proposed Action, Northern Power Line Route Alternative, Southern Power Line Route Alternative, Modified County Road Re-Route Alternative and Western Tailings Storage Facility Alternative, if White Pine County decides to widen the proposed county road re-route to approximately 30 feet, a small portion of the widened BLM 4006 would be visible from KOP 2. The portion of BLM 4006 visible from KOP 2 would be located in an area designated as VRM Class IV. The widened road would introduce a thin horizontal line, portions of which would not be vegetated during operations; therefore, the tan to light brown colors and fine to medium texture of the unvegetated portions of the widened road would contrast with the green colors and medium to coarse textures of the existing surrounding vegetation cover. The proposed activity would result in a weak to moderate degree of contrast in form, line, color and texture relative to the elements of the existing landscape in the surrounding middleground area. This KOP would be observed by casual observers traveling on BLM Road 4006 and on CR 1177. The widened road would conform to the management objectives of VRM Class IV.

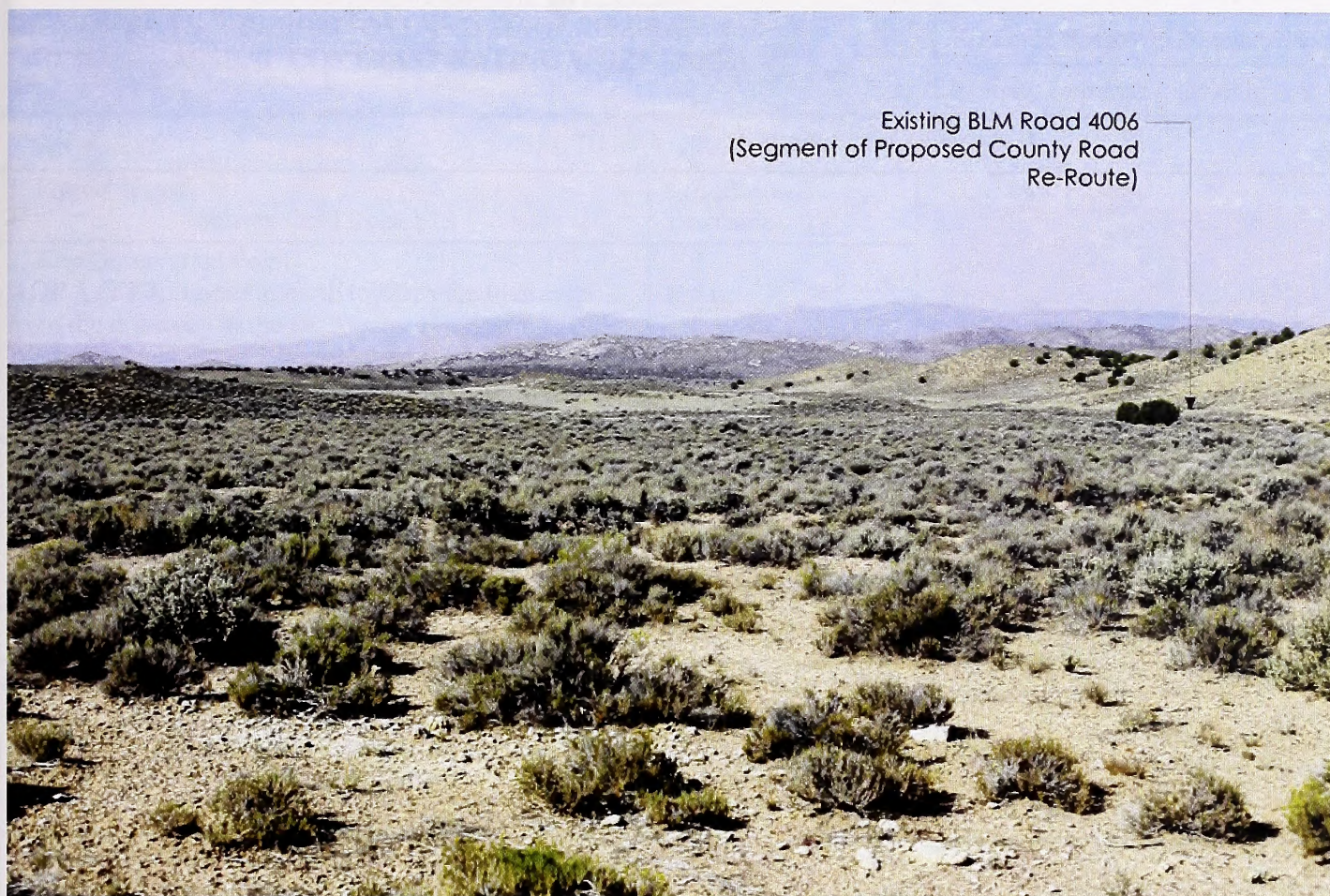
Under the Northwest Main Access Route Alternative, Northern Power Line Route and under the Northwest Main Access Route Alternative, Southern Power Line Route, roads along the access route would be widened to 66 feet. A segment of the widened BLM 4006 would be visible from KOP 2 (looking southwest). The portion of widened BLM 4006 that would be visible in KOP 2 would be located in an area designated as VRM Class IV. The road segment would appear as a thick horizontal line within the middleground area. The widened road would not be vegetated during operations; therefore, the tan to light brown colors and fine to medium texture of the unvegetated portions of the widened road would contrast with the green colors and medium to coarse textures of the existing surrounding vegetation cover. The proposed activity would result in a weak to moderate degree of contrast in form, line, color and texture relative to the elements of the existing landscape in the surrounding middleground area. This segment of widened road along the alternative main access is not expected to dominate the view of the casual observer; therefore would conform to the management objectives of VRM Class IV.



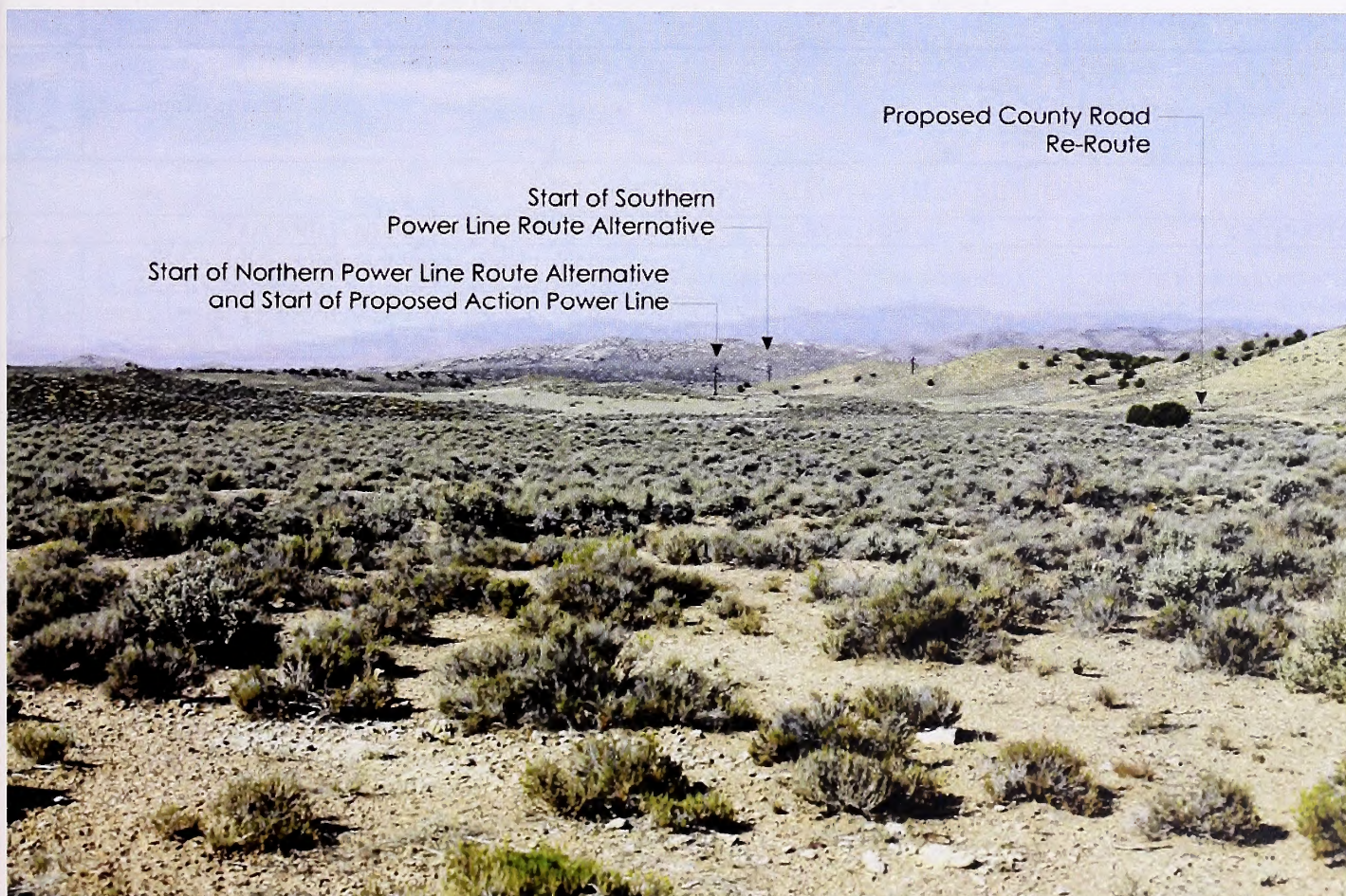




Existing Conditions KOP 2 looking southwest



Visual simulation of KOP 2 looking southwest





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Additional Mitigating Measures (See item 3)

No mitigation measures are recommended.

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UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT  
**VISUAL CONTRAST RATING WORKSHEET**

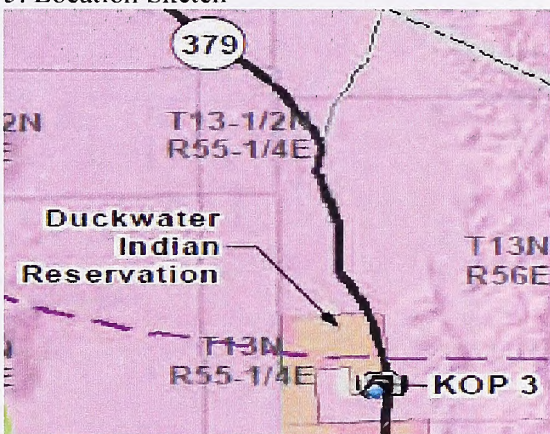
Date: 8/15/2014

District/ Field Office: Ely District/Eagan FO

Resource Area: Ely District, NV

Activity (program): Mining

## SECTION A. PROJECT INFORMATION

1. Project Name Midway Gold Rock EIS	4. Location Township <u>13N</u>	5. Location Sketch 
2. Key Observation Point <b>KOP 3 / PP3:</b> Looking north towards the Plan area from the driveway to the Duckwater Hot Springs (Big Warm Springs). KOP 3 is within the Duckwater Reservation. KOP is approximately 15 miles south of the proposed waste rock disposal areas.	Range <u>56E</u>	
3. VRM Class This location is within VRM Class III and the proposed project facilities that would be visible from this KOP are in the Plan area which is located within a VRM Class IV area.	Section <u>32</u>	

## SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Foreground: Flat and horizontal Mid ground: Low, rounded Background: High, pyramidal and rounded	Low, rounded, irregular, sparse and dense (sagebrush and forbs)	Linear, curved (existing unpaved road, wooden post-and-rail fence, row of rocks)
LINE	Horizontal, diagonal and curved	Low, rounded, irregular, flat (grasses, forbs and shrubs)	Low and vertical, curved (existing unpaved road); low and horizontal (existing wooden post-and-rail fence and row of rocks)
COLOR	Tan, brown and gray (hills in background), tan (escarpment in middleground on right)	Bright green (grass next to road), sage green (sagebrush); tan (tall grasses and forbs)	Tan (existing unpaved road [SR379] in the middleground); brown and gray (wooden fence posts); white (rocks in foreground);
TEXTURE	Medium to coarse	Fine to coarse	Smooth to coarse and dull

## SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Flat or rounded, rectangular or trapezoidal landform introduced in the middleground area from the Proposed Action tailings storage facility (TSF) embankment.	The landform introduced by the proposed activity would not be vegetated during operations.	None of the proposed activity structures (transmission line or other structures) would be visible from this KOP.
LINE	Near horizontal and irregular line at skyline.	The proposed activity landform would create irregular, thin lines of unvegetated surfaces.	None of the proposed activity structures (transmission line or other structures) would be visible from this KOP.
COLOR	The Proposed Action embankment would appear medium to dark brown.	The brown colors of the unvegetated Proposed Action Tailings Storage Facility embankment would contrast with the green colors of the existing surrounding vegetation cover.	None of the proposed activity structures (transmission line or other structures) would be visible from this KOP.
TEXTURE	Medium to coarse	Fine to medium texture of Proposed Action Tailings Storage Facility embankment would contrast with the medium to coarse texture of the existing surrounding vegetation cover.	None of the proposed activity structures (transmission line or other structures) would be visible from this KOP.



SECTION D. CONTRAST RATING     SHORT TERM   X   LONG TERM

DEGREE OF CONTRAST		FEATURES											
		LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
		STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM			X				X					X
	LINE			X				X					X
	COLOR			X				X					X
	TEXTURE			X				X					X

2. Does project design meet visual resource management objectives?   X   Yes     No  
(Explain on reverses side)

3. Additional mitigating measures recommended     Yes   X   No (Explain on reverses side)

Evaluator's Names \_\_\_\_\_ Date: 8/2014  
Kathryn Cloutier, ARCADIS

## SECTION D. (Continued)

Comments from item 2.

KOP 3 is looking north towards the Plan area from the driveway to the Duckwater Hot Springs (Big Warm Springs). This KOP is located within the Duckwater Reservation and is approximately 15 miles south of the proposed waste rock disposal areas. This KOP is located within an area designated as VRM Class III.

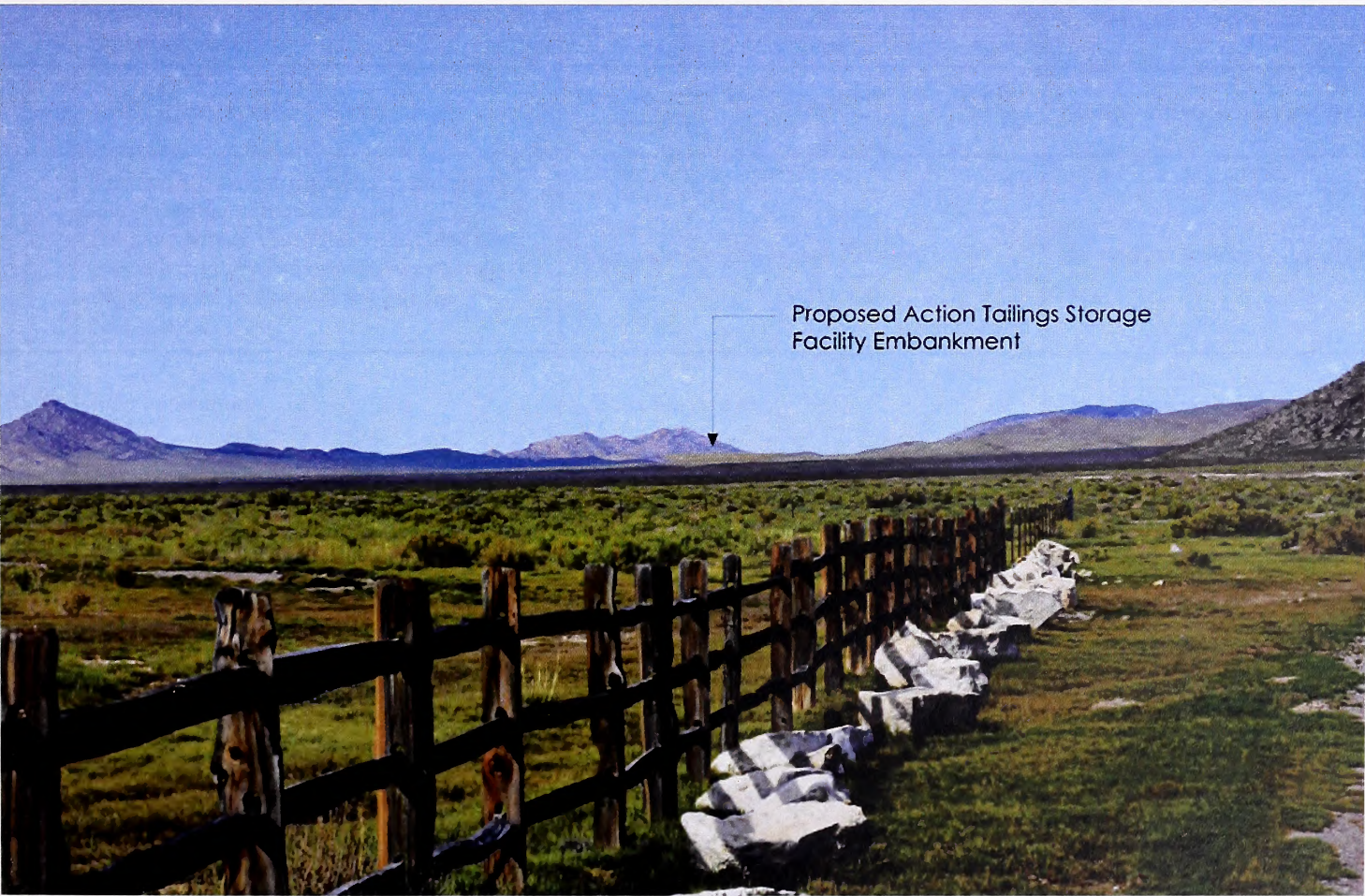
Under the Proposed Action, a portion of the Proposed Action Tailings Storage Facility embankment would be visible from this KOP. The portions of the Proposed Action Tailings Storage Facility embankment visible from KOP 3 are located in an area designated as VRM Class IV. The Proposed Action Tailings Storage Facility embankment would introduce a flat or rounded near horizontal or irregular, rectangular or trapezoidal landform at the skyline in the middleground area at the skyline and would remain unvegetated during operations; therefore, the brown colors and fine to medium texture of the Proposed Action Tailings Storage Facility embankment would contrast with the green colors and medium to coarse textures of the existing surrounding vegetation. The Proposed Action Tailings Storage Facility embankment would represent a weak degree of contrast relative to the form, line, color and texture elements of the existing landscape of the surrounding middleground area because the proposed landform would be approximately 15 miles away, low on the horizon, and is anticipated to blend into the horizon and be difficult to discern from the background. This KOP would be observed by casual observers traveling on SR 379 and occupants of the Duckwater Reservation. The Proposed Action Tailings Storage Facility embankment would conform to the management objectives of VRM Class IV.



Existing conditions KOP 3 looking north



Visual simulation of KOP 3 looking north





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Additional Mitigating Measures (See item 3)

No mitigation measures are recommended.

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UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT  
**VISUAL CONTRAST RATING WORKSHEET**

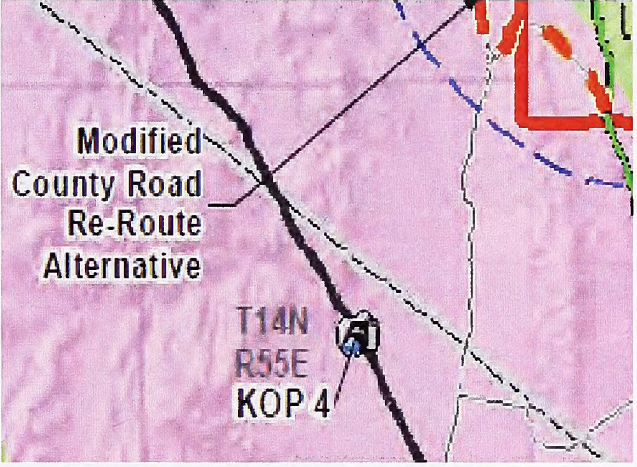
Date: 8/15/2014

District/ Field Office: Ely District/Eagan FO

Resource Area: Ely District, NV

Activity (program): Mining

## SECTION A. PROJECT INFORMATION

1. Project Name Midway Gold Rock EIS	4. Location Township <u>14N</u>	5. Location Sketch 
2. Key Observation Point <b>KOP 4 / SP-1:</b> Looking northeast from SR 379 (Duckwater Road) near the intersection of Duckwater Road and BLM 4006/CR 1180, approximately 8 miles south/southwest of the proposed waste rock disposal areas (across the valley). KOP 4 is located in an area known as Bull Fork in Nye County.	Range <u>55E</u>	
3. VRM Class  This location is within VRM Class III and the proposed project facilities that would be visible from this KOP are in the Plan area which is located within a VRM Class IV area.	Section <u>22</u>	

## SECTION B. CHARACTERISTIC LANDSCAPE DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	Foreground: Flat, gently sloping Mid ground: Low, rounded Background: High, pyramidal (Mount Hamilton and closed Easy Junior Mine waste rock disposal area and heap leach pile (in background))	Medium height (juniper) Low, rounded, irregular, sparse and dense (sagebrush and forbs)	No existing structures are visible.
LINE	Vertical, diagonal and curved	Low, rounded, irregular, flat (grasses, forbs and shrubs)	No existing structures are visible.
COLOR	Tan and brown (bare ground in foreground and escarpment in middleground), light tan (existing Mount Hamilton Mine) blue and grey closed Easy Junior Mine waste rock disposal area and heap leach pile (in background)	Sage green (sagebrush) and brown	No existing structures are visible.
TEXTURE	Fine to medium	Medium to coarse	No existing structures are visible.

## SECTION C. PROPOSED ACTIVITY DESCRIPTION

	1. LAND/WATER	2. VEGETATION	3. STRUCTURES
FORM	The proposed north and south waste rock disposal areas (WRDAs) and the heap leach pile would introduce flat to rounded, rectangular or trapezoidal landforms in the middleground area.	Landforms introduced by the proposed activity would not be vegetated during operations.	None of the proposed activity structures would be visible from this KOP.
LINE	The proposed activity landforms would appear as near horizontal and irregular lines below the horizon.	The proposed landforms would create irregular, thin lines of unvegetated surfaces.	None of the proposed activity structures would be visible from this KOP.
COLOR	The north and south WRDAs would appear dark brown. The heap leach pile would be medium to light brown.	The brown colors of the unvegetated proposed activity landforms would contrast with the green colors of the existing surrounding vegetation cover.	None of the proposed activity structures would be visible from this KOP.
TEXTURE	The textures of the proposed activity landforms would be fine to medium.	The fine to medium textures of the unvegetated proposed activity landforms would contrast with the medium to coarse textures of the existing surrounding vegetation cover.	None of the proposed activity structures would be visible from this KOP.



SECTION D. CONTRAST RATING	SHORT TERM	X LONG TERM
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DEGREE OF CONTRAST		FEATURES											
		LAND/WATER BODY (1)				VEGETATION (2)				STRUCTURES (3)			
		STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE	STRONG	MODERATE	WEAK	NONE
ELEMENTS	FORM			X			X						X
	LINE			X				X					X
	COLOR		X				X						X
	TEXTURE		X				X						X

2. Does project design meet visual resource management objectives?      X   Yes         No  
(Explain on reverses side)

3. Additional mitigating measures recommended  
     Yes      X   No    (Explain on reverses side)

Evaluator's Names  
Kathryn Cloutier, ARCADIS

Date: 8/2014

## SECTION D. (Continued)

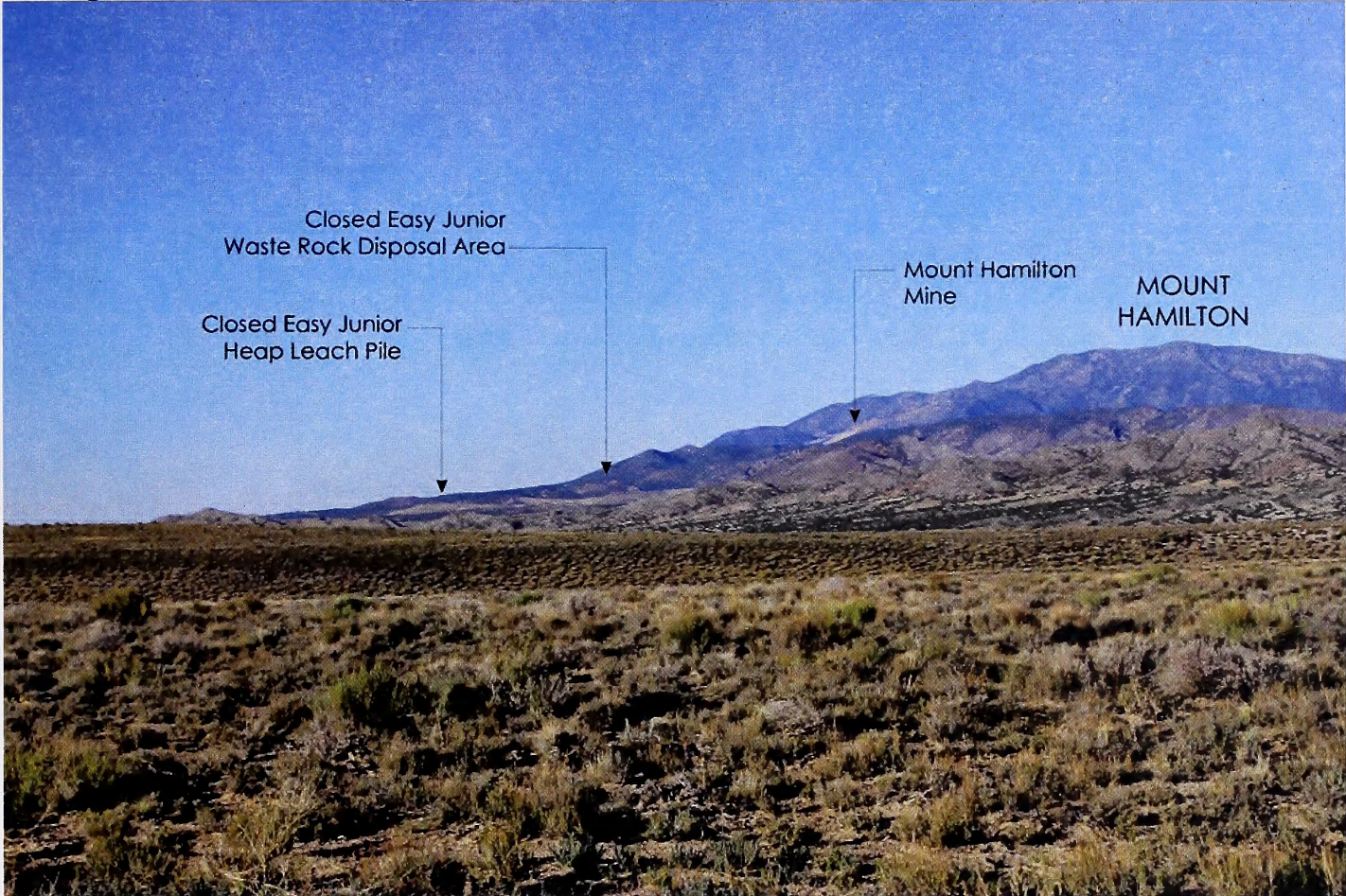
Comments from item 2.

KOP 4 is looking northeast (across the valley) from SR 379 (Duckwater Road) near the intersection of Duckwater Road and BLM Road 4006/CR 1180, approximately 8 miles south/southwest of the proposed waste rock disposal areas (WRDAs). KOP 4 is located in an area known as Bull Fork in Nye County. This location is within an area designated as VRM Class III.

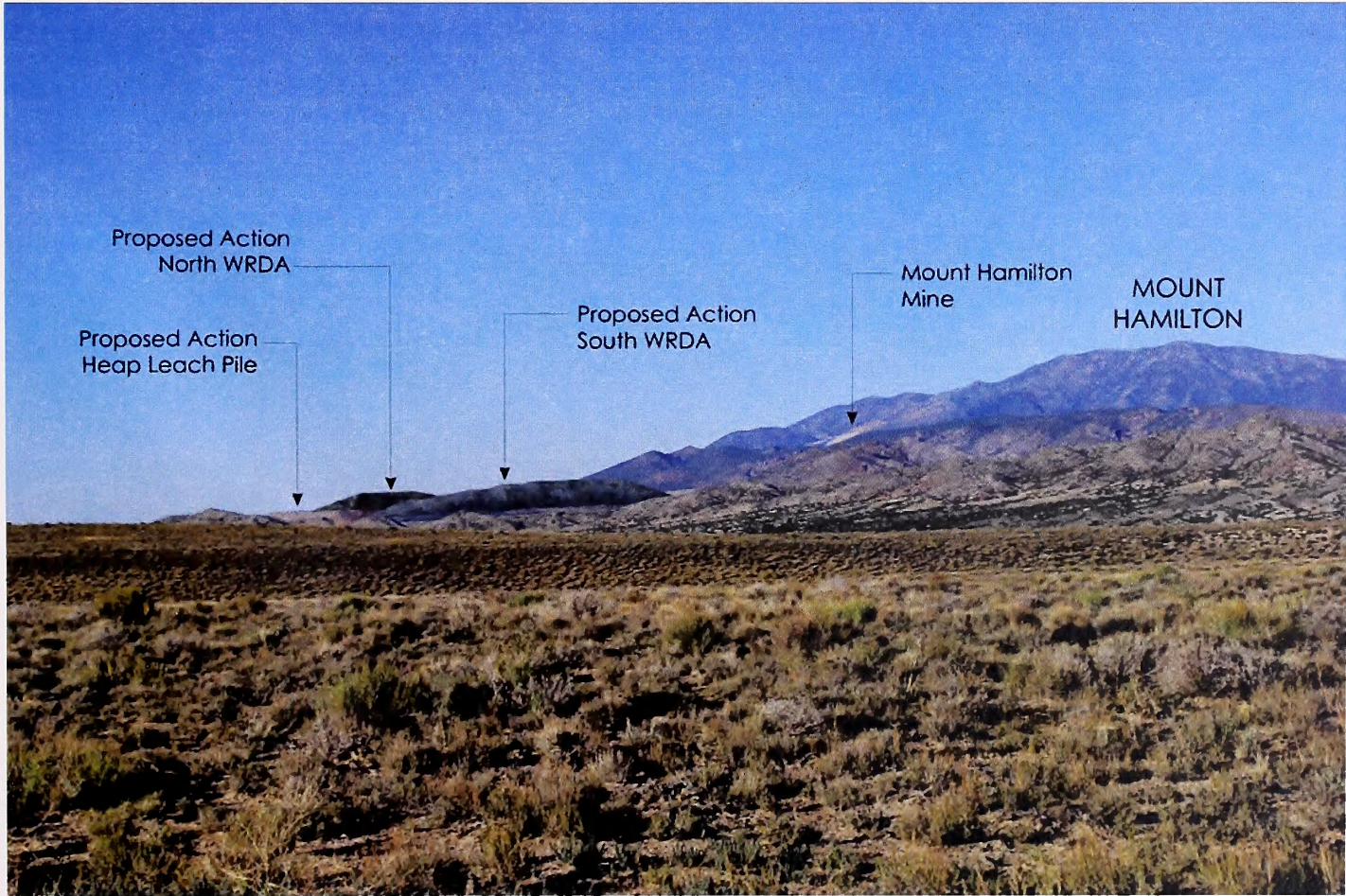
The proposed north and south WRDAs and the heap leach pile would be visible from this KOP. The portions of the proposed north and south WRDAs and the heap leach pile visible from KOP 4 are located in an area designated as VRM Class IV. The proposed WRDAs and heap leach pile would introduce flat to rounded, near horizontal and irregular lines below the horizon and would remain unvegetated during operations; therefore, the brown colors and fine to medium textures of the proposed landforms would contrast with the green colors and medium to coarse textures of the existing surrounding vegetation. The visible portions of the proposed activity would represent a weak to moderate degree of contrast relative to the form, line, color and texture elements of the existing landscape of the surrounding middleground area because the proposed landforms would be approximately 8 miles away, and are anticipated to blend into the horizon and be difficult to discern from the background. This KOP would be observed by casual observers traveling on SR 379. The proposed activity landforms would conform to the management objectives of VRM Class IV.



Existing conditions KOP 4 looking northeast



Visual simulation of KOP 4 looking northeast





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Additional Mitigating Measures (See item 3)

No mitigation measures are recommended.

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**United States Department of the Interior  
Bureau of Land Management  
Egan Field Office, Nevada**



**Draft Environmental Impact Statement  
for the  
Gold Rock Mine Project  
Volumes 1 and 2  
BLM / NV / EL / ES / 15-05+1793  
February 2015**

C:\Line\2011  
ENVIRONMENTAL IMPACT STATEMENT



Bureau of Land Management  
Egan Field Office  
702 North Industrial Way  
Ely, Nevada 89301